# CORRECTIVE PHYSICAL EDUCATION FOR GROUPS

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# CORRECTIVE PHYSICAL EDUCATION FOR GROUPS

FIGURE 1

Health! Joy! The Birthright of All Boys and Girls

# Corrective Physical Education for Groups

## A TEXT BOOK OF ORGANIZATION, THEORY, AND PRACTICE

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BOSTON, MASS.

NEW YORK
A. S. BARNES AND COMPANY

RM
721
L65

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PRINTED IN THE UNITED STATES OF AMERICA

# FOREWORD

With the constantly growing recognition of the importance of detecting and remedying growth handicaps in youth, there has come a need for a safe yet effective procedure of diagnosing and dealing with the many children so affected, in groups. For purposes of individual diagnoses and correction there have been available for years excellent data and material.

Dr. Lowman, a man who holds an enviable record in his special field of orthopædic surgery, aware of the frequency of these handicaps and of the certain later after effects, leaves no doubt as to his conviction of the significance of turning the major attention for prevention and correction to the elementary school years. It is at this time that corrections are easiest effected.

The authors of these pages have rendered a most valuable service to the teacher of physical education and the physician by devising and compiling these technical and remedial exercises, which during their clinical and school experience have proven definitely effective, and which are feasible in the public schools.

The purpose in the main is preventive, and Dr. Lowman makes it very clear that all structural cases are for the orthopædic specialist only and not for the physical education teacher nor the general medical practitioner. The introduction as well as the detailed and defined content material evinces the most painstaking preparation.

With this volume, then, there is offered to the schools training teachers for physical education, a text, and to the teachers in the field the best equipped for the task, a guide that will be a welcome counselor in this growing field of corrective physical education.

Carl L. Schrader,
*State Supervisor of Physical Education, State House, Boston.*

453867

# INTRODUCTION

This book is presented as a theoretical and practical guide for teachers in the field, and students in training for physical education. We have made an effort to meet the need that has long been felt for a finer grading of students, for adapted group exercises, for an all round program of varied activities suited to the capacities of the groups involved. We offer suggestions for organization and methods, in order that the program of physical education may have corrective values for all. In outlining this text it has been impossible to confine the discussion solely to the small majority of boys and girls who may be assigned to corrective classes. In view of the physical needs of all boys and girls, in any comprehensive treatment of the corrective problem, a suitable program of activities must be definitely planned and consistently carried out for all students. We have suggested activities for regular groups in brief outline only, but have presented, in detail, methods and a comprehensive program for the groups designated other than regular, as the restricted and corrective groups. The practical value of the material set forth has long been proven in many schools.

Physical education is now a state law requirement in a majority of states. Examinations by physicians in Colleges, High Schools and Junior High Schools have shown that growth faults are the rule rather than the exception. It immediately becomes apparent then, that the same type of physical education program cannot be applied to all students with effective results. Consequently there arises the need for an adapted group program to fit the physical capacities of all students. The question most often asked by physical education teachers is, "What shall I do with corrective classes?"

It has not been possible in the organization of physical education programs in the large or small High and Junior High Schools to limit the corrective classes to small numbers of students, so that an individual program might be carried out. Many requests have come to the authors for corrective material, exercises, games and Good Posture Week suggestions. Dr. Lowman has consistently urged that corrective principles could be extended and applied to group work. Miss Cooper and Miss Colestock, working with Dr. Lowman in corrective courses at the Orthopædic Hospital-School, and at the University of Southern California, have put into practical use in their work in the Pasadena City Schools the principles and theories as enunciated by Dr. Lowman.

The problem as presented has been approached from the standpoint of the orthopædic surgeon and the supervisor of High, Junior High and Elementary School Physical Education Departments, both regular and corrective. The viewpoint of teachers in both colleges and secondary schools, as well as that of technicians doing private physical education and physiotherapeutic work, has been considered. All of which has been based upon the following experience:

Charles Le Roy Lowman, M.D., F.A.C.S.—Coach-Instructor in Physical Education Department, Girls Collegiate School, Los Angeles, 6 years; Consulting Advisor and Examiner, Physical Education Department, Los Angeles Y. M. C. A., 3 years; Chief of Orthopædic Clinic, University of California in Los Angeles, 6 years; Chief of Staff, Orthopædic Hospital-School, Los Angeles, 10 years; Lecturer on Corrective Physical Education, Pomona College and University of Southern California, 8 years; Advisory Consultant, Board of Education, Los Angeles City Schools; and Supervisor of private orthopædic gymnasium, 18 years, and of orthopædic clinic gymnasium, 10 years.

Miss Claire Colestock, A.B.—Teacher of Regular and Corrective Physical Education: Public Schools, New Castle, Pennsylvania; Sewickley High and Elementary Schools, Sewickley, Pennsylvania; Jefferson High School, Los Angeles, 4 years; Playground Instructor, Pittsburgh Playgrounds, 4 summer terms; Supervisor of Physical Education, Pasadena Elementary and Junior High Schools, 5 years; Assistant Director Physical Education, Pasadena City Schools, 6 years; Instructor in Private Post Graduate Course of Dr. Sven Lokrantz, Corrective Physical Education, 1 summer term; Instructor in Organization and Methods of Regular and Corrective Physical Education, Fresno State Teachers College, Huntington Lake, California, 1 summer term; University of California Extension Division, Los Angeles, 4 years; University of Southern California, Los Angeles, 1 summer term; Post Graduate work under Dr. Lowman at University of Southern California, 4 years; and practical work at Orthopædic Hospital-School, Los Angeles, 4 years.

Miss Hazel Cooper—Teacher of Regular Physical Education, Brockton High School, Brockton, Mass., 3 years; Director, Girls' Physical Education, Pasadena High School, 8 years; Corrective Physical Education, Pasadena High School, 5 years; private work with orthopædic specialists, Boston, Mass., Drs. E. G. Brackett and W. R. MacAusland, 7 years; Physical Director, Millet Sanitarium, 7 years; Physical Director, Out-Patient Department of Tuberculosis Clinic, Brockton Society for Prevention of Tuberculosis, 2 years; Post Graduate work under Dr. Lowman at University of Southern California, 4 years; and practical work at Orthopædic Hospital-School, Los Angeles, 4 years.

In making these suggestions and arranging this collection of exercises we do not desire to claim originality for most of them. Practically all technicians and directors working in a limited field sooner or later discover and use similar exercises. Our efforts and attention have been centered chiefly on the adaptation, progression, arrangement, and application of exercises to suit major group needs. We appreciate that many of these exercises will be subject to criticism. We request, however, that they be considered in relation to the rest of the schedule in which they are presented and not be considered piecemeal or singly. They will stand the test for the purpose advocated, that is, the use in group corrective work. We realize that any of the exercises in a schedule could not be adequately applied to the individual needs of twenty or thirty different students without readaptation to separate needs. We have attempted to lay down fundamental principles upon which teachers and others in the field of physical education may build. Whenever a corrective exercise seems to have a doubtful influence on another part of the body than that for which it was specifically designated, we have taken pains to neutralize this effect by sufficient counteractivity in other parts of the schedule.

Our purpose in this work has not been to supply a text for orthopædic technicians in their work with individual patients. The major object has been to call attention to certain schedules of safe exercises, together with suggestions as to administration and organization of corrective class work and to give a reasonable amount of theory to show our reasons for the same.

We desire to acknowledge the part played by various agencies from which help, material, suggestions and experimental work have been obtained: notably the Orthopædic Hospital-School of Los Angeles, Physical Education Department and Corrective Physical Education Department of Pasadena High School, Junior High Schools and Elementary Schools of Pasadena, the Glendora Foothills School, and to those individuals whose help, influence, suggestions, and criticism have added to any value this work may possess.

We are especially indebted to the following:

Mr. Carl L. Schrader, State Supervisor of Physical Education, Massachusetts, for valuable suggestions and criticisms of exercises and arrangement of material.

Dr. Sven Lokrantz, Director of Health and Corrective Physical Education, Los Angeles City Schools, for comprehensive data as to the organization and procedure of corrective physical education in the Los Angeles City Schools.

Mr. C. F. Martin, Director of Physical Education, Pasadena City Schools, for application of age, weight, grade, and height classification (Reilly System).

Professor W. R. La Porte, Director of Department of Physical Education, University of Southern California, for suggestions and help in organization of corrective physical education.

Dr. Gertrude Seabolt, Medical Examiner for Girls, Pasadena City Schools, for helpful suggestions in the classification and assignment of students.

Miss Sue Roen, Director of Physical Education, Orthopædic Hospital-School, Los Angeles, and Director of Dr. Lowman's private gymnasium, who during her many years of work with him has evolved much corrective exercise material which has been adapted for use in group work.

We wish to acknowledge our appreciation of the work of Dr. Wm. Skarstrom, Professor of Physical Education, Wellesley College, from which we have drawn inspiration and help, especially in the technique of teaching.

We also wish to thank the following who have made definite contributions in many ways:

Miss Catherine Worthingham, formerly of Orthopædic Hospital-School of Los Angeles, now Instructor in Corrective Physical Education, John Muir Technical High School, Pasadena.

Miss Alice Evans, formerly Director of Physical Education, Pomona College, Claremont, California.

Miss Jean Holt, Head of Department of Physical Education for Girls, Eagle Rock High School, Los Angeles.

Mrs. Jane Arnold Graves, Assistant Supervisor Physical Education, San Francisco Public Schools, San Francisco, California.

Mr. C. P. Nichols, Instructor in Physical Education, University of Southern California, Los Angeles, California.

Miss Mildred Tolhurst, Instructor in Corrective Physical Education, Pasadena Elementary Schools.

Miss Grace Hartley, Head of Department of Physical Education for Girls, Palo Alto Union High School, Palo Alto, California.

Miss Fanny Burt, University of California, Los Angeles, 1927.

Miss Emma Heilman, formerly in charge of Women's Corrective Department, University of Utah and Reed College, Portland, Ore., now Instructor Corrective Physical Education, Belvedere Junior High School, Los Angeles, California.

Mrs. Charles van Laun for her painstaking and accurate review of the typographical details and assistance in arrangement of material.

Miss Dorothea Capps, Pasadena Junior College, 1929—Illustrations.

Miss Esther Johnson, University of California, Los Angeles, 1930—Illustrations.

Mr. Nelson Sandt, Polytechnic High School, Los Angeles, 1927—Illustrations.

Mr. Roy Parsons, Student Loma Linda Medical College, Loma Linda, California—Illustrations.

Mr. Ward Rolland, Student University of Michigan Medical College. Ann Arbor—Illustrations.

Miss Elizabeth Lowman, Los Angeles—Illustrations.

Miss Ruth McNatt, Pasadena, California—Illustrations.

Miss Genevieve Kelso, Head Department, Girls' Physical Education, Jefferson High School, Los Angeles, California—For use of cuts of dramatic poses.

C.L.L.
C.C.
H.C.

Los Angeles, California,
November, 1927.

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# PART I

# CHAPTER I

## The Corrective Problem

### Statement of the Need

To all those physical directors and physicians whose activities lead them to deal with the physical problems of the school child, it must be definitely evident that their findings show a very high percentage of deviations from the so-called normal. The percentages of these various findings vary, of course, in accordance with the powers of discrimination of the examiner. But, even the findings on gross examinations show a percentage of foot and leg deviations, as well as those of shoulder girdle and back, which is so great that the problem of their correction becomes one of considerable magnitude.

There is a continuous flow through the orthopædic surgeon's office of adults who present themselves for treatment, between the ages of thirty and fifty. They come complaining of various types of backaches, foot and leg symptoms, sciatica and other forms of neuritis, etc. In the majority of them, faults in bodily alignment are found to be definite causative factors. It is altogether too common a practice among the disinterested or untrained, to make the statement that the child will "outgrow" such deviations. We all know that under certain circumstances quite a high percentage of cases of postural deviations, such as mild back knees and bowlegs, round shoulders, etc., do, ultimately, become corrected through the normal avenues of activity of the child. In the examination of large groups of adults, however, we find a continuation of these conditions in a high percentage of cases. If men with good orthopædic training, and with good powers of discrimination are unable to say which child will outgrow these divergencies, it certainly is quite evident, from a prophylactic and preventive standpoint that it is essential not to trust to luck that the growing child will overcome his difficulties without assistance.

A careful perusal of the results of the examinations made of drafted men during the last war, shows that even among the young men of the country of college age, a very high percentage of whom had at least high school training, there were many who had some physical deviation. Even among those who had had several years of regular physical education, there was such a very high degree of physical unfitness, that the percentage unfit for service was extraordinarily high. Consideration of this fact gives us much food for thought. It has awakened so much interest that since the war every one who has had to deal with the physical education problem has learned to realize that the corrective aspect of the work is assuming a position of greater importance than it has heretofore.

It is likewise a self-evident fact, to all those connected with the work of the high schools, that a very large percentage of students of high school age are scarcely physically able to stand the stress of life during that period. It is also obvious to those of us who examine a great many adults that an enormously high percentage of them are physiologically inadequate to meet the demands of social and business life.

## COLLEGES AND UNIVERSITIES

### Results of Survey, Dr. Brown, Harvard University

Estimates made by various orthopædic surgeons, based upon their experience with posture cases, are well justified and confirmed by the findings in colleges, high schools and elementary schools.

That the need is most urgent in colleges and universities for a more specific physical education is shown by the results of a survey made by Dr. L. T. Brown, of Harvard University. It can be taken for granted, surely, that the young men who enter Harvard have had opportunities in training and equipment in the best High and Preparatory Schools in the country. Dr. Brown found in 1916 in his examination of entering freshmen that 80% had "poor" or "very poor" mechanical use of the body. In 1919 the results were 84.1% "poor" and "very poor."

Dr. Brown grades posture as follows (taken from Body Mechanics Pamphlet, issued by the Department of Hygiene and Physical Education, Harvard University, Cambridge, Mass.):

A—Excellent Mechanical Use of the Body.
B—Good Mechanical Use of the Body.
C—Poor Mechanical Use of the Body.
D—Very Poor Mechanical Use of the Body.

He gives as a result of a four-year survey the following:

| Class of | A | B | C | D | Number examined |
|---|---|---|---|---|---|
| 1923 ............ | .99% | 14.81% | 49.31% | 34.89% | 513 |
| 1924 ............ | 2.36% | 17.19% | 51.41% | 29.04% | 599 |
| 1925 ............ | 2.73% | 22.51% | 47.73% | 27.03% | 773 |
| 1926 ............ | 2.64% | 20.84% | 49.87% | 26.65% | 758 |

Dr. Brown's survey indicates a high percentage—from 80% to 85%—in the C and D groups. Is this not an appalling fact, especially when one considers that the young men entering Harvard University represent a selected group of individuals?

**Results of Survey, Professor Stafford, University of Illinois**

George T. Stafford, Professor of Orthopædics and Physical Diagnosis, University of Illinois, in "Corrective and Remedial Gymnastics" (1924—2nd Edition) gives some illuminating results of a thorough and comprehensive survey of entering freshmen class of 1927:

"The University of Illinois has made an effort since 1922 to give special exercises to those who, from their physical examinations, show faulty body mechanics. The result of the examination of the freshmen, class of 1927, reveals the following facts:

| | |
|---|---|
| Total number of men examined | 1,940 |
| Number having normal spine .. | 171 |
| Number having kyphosis (med.) | 772 |
| Number having kyphosis (sl.) .. | 401 |
| Number having kyphosis (sev.) | 541 |
| Number having scoliosis (med.) | 496 |
| Number having scoliosis (sl.) .. | 555 |
| Number having scoliosis (sev.) | 342 |
| Number having lordosis (med.) | 661 |
| Number having lordosis (sl.) .. | 568 |
| Number having lordosis (sev.) | 347 |
| Long arches first degree (right) | 534 |
| Long arches first degree (left) | 519 |
| Long arches second degree (right) .................. | 191 |
| Long arches second degree (left) .................. | 202 |
| Long arches third degree (right) .................. | 334 |
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| Long arches normal (left) ... | 838 |
| Anterior arches first degree (right) .................. | 359 |
| Anterior arches first degree (left) .................... | 349 |
| Anterior arches second degree (right) .................. | 281 |
| Anterior arches second degree (left) .................... | 291 |
| Anterior arches third degree (right) .................. | 240 |
| Anterior arches third degree (left) .................... | 241 |
| Anterior arches normal (right) | 1,035 |
| Anterior arches normal (left) | 1,038 |

| General Development | |
|---|---|
| Excellent .................. | 28 |
| Good ...................... | 719 |
| Fair ........................ | 958 |
| Poor ....................... | 235 |

| Nutrition | |
|---|---|
| Thin ........................ | 553 |
| Average .................... | 1,228 |
| Obese ...................... | 49 |

| Build | |
|---|---|
| Stocky ..................... | 135 |
| Medium .................... | 1,477 |
| Slender ..................... | 328 |

| Defective Heart | |
|---|---|
| Defective .................. | 75 |

| Albuminuria | |
|---|---|
| Albuminuria ................ | 109 |

| Constipation | |
|---|---|
| Constipation ................ | 62 |

(Figures compiled by C. B. Fayles)

Prof. Stafford says: "The percentage of orthopædic defects for the class of 1927 is much larger than that for the class of 1926. Only 43.4% of the men of 1927 had normal feet, while 71.25% of the men of the 1926 class were graded as having normal feet. This marked difference does not mean that any unusual degree of deterioration has occurred in the 1927 group. The difference in figures is due to the examination of the 1927 men being made on a basis of functional or potential defects. The 1926 examination was based on clinical findings.

"The functional basis is used to detect defects of a potential nature, thus allowing for correction before any material damage has occurred. It has been found from experience that the more definite the clinical symptoms the more difficult is the correction. It is common knowledge that the more marked the clinical symptoms of tuberculosis, or cancer, the less hope there is for the patient's recovery. Thus in pronation of the feet, though the feet are not flat, a potential weakness is present. Continued use of the feet in this position causes undue strain and poor mechanical use of the feet, thus predisposing the feet to weakness and possible disability."

Both Professor Stafford's and Dr. Brown's findings in connection with the examination of their entering students indicate very definitely the need of a finer grading, classification and a more carefully organized system of physical education for the pre-elementary, elementary and high school boy and girl.

## HIGH SCHOOL, JUNIOR HIGH SCHOOL AND ELEMENTARY SCHOOL

### Corrective Physical Education—Los Angeles City Schools

The needs of boys and girls of high school and elementary age are well stated and summarized by Dr. Sven Lokrantz, Director Health and Corrective Physical Education Department, Los Angeles City Schools, in the Annual Report of the Department of Health and Corrective Physical Education 1925-1926:

The Corrective Physical Education Section of the Department of Health and Corrective Physical Education, Los Angeles City Schools, was established in 1918. After eight years of growth it is now able, with all its workers, to reach and help approximately 45,000 children. All of the senior and junior high schools have corrective rooms with teachers in charge. Since January, 1924, there have been nine corrective physical education centers in operation to take care of the elementary school children. From various schools, children are sent with bad posture, flat feet, heart affections, nutritional disturbances and paralysis. Once a month an orthopædic specialist examines the most extreme cases of indigent paralytic children. The medical supervision of the examination is taken care of by a specially qualified physician. Most excellent work has been done during the past four years.

Procedures for corrections are: free floor corrective group gymnastics, individual corrective gymnastics, orthopædic gymnastics, non-surgical orthopædics, rest, diet, sun baths, strapping and home exercises.

There are about 30,000 children with different abnormal postural conditions, such as round shoulders, spinal curvatures and narrow chests. These children, if not helped, will fail to develop into strong men and women. Hygiene, rest, corrective exercises, jackets and general corrective procedures will give astounding results in a short time.

There are nine thousand children with heart defects who have been aided by the Department of Health and Corrective Physical Education. Children with heart defects are excused from regular physical training and assigned to corrective physical training classes. By giving such children an opportunity to rest and by giving them graded exercises to enlarge their chest capacity, we give them longer lives.

In most of the elementary schools, we find a great number of heart cases which demand investigation, examination and reëxamination, and the problem of handling these cases is a very important one. The functional heart conditions and minor lesions are handled in groups of from ten to twenty-five, and special heart exercises are given. Other more serious lesions, like aortic regurgitation, mitral stenosis, and double lesions, come under the care of private physicians.

The corrective work among the kindergarten children is a problem in itself. It is handled by a physician and a special worker who are interested in the younger children and have a special knowledge of their problems.

The Junior and Senior High School Corrective Classes have been a potent factor in the schools during the past year. As we sit in retrospection, it is well to be able to say that certain aims have been actually accomplished.

In addition to the splendid work in the senior and junior high schools and elementary corrective centers, the work of the traveling corrective teacher has eliminated the transportation problem. It has been possible to take care of more children with less expense and equipment. Also the traveling teacher has a more personal contact with the principals.

## Nutrition Section

The value of nutrition classes is being realized as time advances and work has an opportunity to prove itself. Reports on improvement in school work, physical appearance, concentration, coöperation, disposition, aside from decided improvement in general health, have been received from the principals in schools where classes were conducted.

Milk, instruction in correct foods, health habits, the value of rest, and a twenty- or thirty-minute rest period form the principal features of these classes. Cots are provided by the Board of Education for these classes and provisions are made for rest in the open air. Children with physical defects are referred to specialists for correction. There are conferences with parents and home studies are carefully planned.

Special health rooms are being opened in several schools this year. These rooms will more completely carry out the health program necessary for children well enough to attend school, but unable to carry the regular school schedule.

### Kindergarten Corrective Centers

The Kindergarten Corrective work is well worth while. It has not taken long to see that very small children can follow the directions and do the exercises as well as the older children—if they are presented in a simple and play-like way. In fact a class of eight kindergarten children can easily be handled in corrective work, if the children are all mentally sound, but the most nervous type should be taken individually or in small groups of two or three.

There is a great need for this work in Los Angeles. A few hundred children could be reached each year, if the work was carried on in the most suitable places. It is felt that kindergarten teachers can do more by constantly stressing good sitting and standing postures, by commenting on the best type of shoes and by discouraging scooters and riding on one skate.

REPORT OF CORRECTIVE PHYSICAL EDUCATION CENTERS FOR YEAR 1925-1926

*Kindergarten Corrective Work*

| Center | Attending | | Dropped | Moved | Transferred | Corrected | Total Receiving Attention |
|---|---|---|---|---|---|---|---|
| | New | Holdovers | | | | | |
| Total (All Schools) .... | 250 | 36 | 80 | 4 | 2 | 27 | 399 |

*Elementary Corrective Centers*

| Center | Appointment | | Dropped | Moved From City | Transferred | Corrected | Attending | Total Receiving Attention |
|---|---|---|---|---|---|---|---|---|
| | Made | Kept | | | | | | |
| Total (All Schools) .... | 4236 | 2788 | 486 | 109 | 191 | 558 | 1389 | 2733 |

*Traveling Corrective Teacher—Elementary Schools*

The following is a report of schools and children cared for this year:

| | |
|---|---|
| Number of Schools ........................................ | 5 |
| Number of pupils dismissed corrected ...................... | 99 |
| Number of pupils to return for correction .................. | 110 |

*Corrective Physical Education in High and Junior High Schools*

| | |
|---|---|
| Pupils enrolled in corrective classes in Junior High Schools | 5,599 |
| Pupils enrolled in corrective classes in High Schools | 7,869 |
| Total in High and Junior High Schools | 13,468 |

| | |
|---|---|
| Average periods taught per teacher | 6 |
| Conditions dismissed in Junior High Schools | 1,725 |
| Conditions dismissed in Senior High Schools | 2,876 |
| Number in nutrition classes in Junior High Schools | 1,966 |
| Number in nutrition classes in Senior High Schools | 2,427 |

Twenty-two gymnasiums in Junior High Schools are standardly equipped.

Twenty-three gymnasiums in Senior High Schools are standardly equipped.”

Kindergartens, Elementary Schools and High Schools show the recognition and excellent organization of corrective physical education in the Los Angeles City Schools.

**Results of Posture Classification—Hollywood High School**

The summary of the results of the classification and posture grading of Girls in the Hollywood High School indicates clearly that the need for a specific program of physical education is being met in this school.

Report on Classification and Posture Grading—Girls 1926. (Submitted by the courtesy of Mrs. Katherine Asher Paige, Head of Department of Physical Education for Girls, Hollywood High School.)

Classification:

| | |
|---|---|
| Enrollment | 1,245 |
| Rest | 50 |
| Nutrition | 50 |
| Corrective | 180 |

Posture Grading:

| | A | B | C | D |
|---|---|---|---|---|
| Grades 11 & 12 | 40% | 40% | 20% | In Corrective |
| Grade 10 | 25% | 50% | 25% | “ “ |

**Classification by Silhouettes—Palo Alto Union High School**

The result of Posture Pictures at the Palo Alto Union High School as shown in the following chart is an excellent example of a concrete method of improving poor posture when the need is clearly recognized and understood. (Submitted by the courtesy of Miss Grace Hartley, Physical Education Department, Palo Alto Union High School, Palo Alto, California.)

Result of four pictures for 128 girls: (See Fig. 20, page 54):
Pictures were taken in fall and spring, 1924-25 and 1925-26.
Grades of pictures range from Very Poor (P—) to Excellent (E).
Grades P—, P and F are called Unsatisfactory (U).
Grades G, G, and E are called Satisfactory.

The Number of Each Grade

| | | Oct. 1924 | | May 1925 | | Oct. 1925 | | May 1926 | |
|---|---|---|---|---|---|---|---|---|---|
| Excellent | (E) | S-23 | 6 | S-50 | 11 | S-64 | 24 | S-89 | 29 |
| Good | (G) | | 7 | | 19 | | 15 | | 27 |
| Good | (G) | | 10 | | 20 | | 25 | | 33 |
| Fair | (F) | U-105 | 37 | U-78 | 49 | U-64 | 47 | U-39 | 27 |
| Poor | (P) | | 53 | | 25 | | 14 | | 10 |
| Very Poor | (P—) | | 15 | | 4 | | 3 | | 2 |

Note: The chart indicates 105 Unsatisfactory Postures in October, 1924, as compared with 39 Unsatisfactory Postures in May, 1926.

### Results of Posture Grading—San Francisco Elementary Schools

Report of Posture Grading of Elementary School Children in the San Francisco City Schools shows also a large number of children in the Poor and Very Poor, C and D class. The report is incomplete (does not include the entire enrollment of the San Francisco Public Schools) but the numbers given are sufficiently large for presentation of the problem. (Submitted by the courtesy of Mrs. Jane Arnold Graves, Ass't Supervisor Physical Education, San Francisco Public Schools.)

Children from First to Eighth Grades (Inclusive)

1923

| A | B | C | D |
|---|---|---|---|
| 10,365 | 3,261 | 2,200 | 4,742 |

1924

*Spring Term*

| A | B | C | D |
|---|---|---|---|
| 12,175 | 5,298 | 2,413 | 4,762 |

*Fall Term*

| A | B | C | D |
|---|---|---|---|
| 7,963 | 4,266 | 2,452 | 4,756 |

Children from Fourth to Eighth Grades (Inclusive)

1925

| A | B | C | D |
|---|---|---|---|
| 7,433 | 4,974 | 2,201 | 4,863 |

The figures submitted show in Fall term of 1924, approximately 7,500 in the C and D groups, with 12,000 in the A and B groups; in 1925, 7,000 in the C and D groups as compared to 12,000 in the A and B groups, or approximately 39% in the C and D or Poor and Very Poor Posture Groups.

These figures are interesting as compared to the findings in any group of adults including both college and high school ages. When the percentage changes from 40% or 50% in groups of elementary school age to between 70% and 85% in adults, should we not look into all phases of the educational program? Should not the educational program improve the physical condition of the student?

### Results of Survey—Glendora Foothills School

"Report of Survey of Pupils and Activities at Glendora Foothills School" by Lowman and Nicholls, published in "A Collection of Papers" by Lowman, shows that even in a small private school the need for more specific training is most urgent:

"There were about fifty pupils in this school, both sexes about evenly divided, and ranging in age from five to fourteen years. All these children came from good homes and would compare physically and mentally with a similar group from any regular grade school. Eligibility for admission to this school ruled out all mental subnormals or deficients, and those suffering from tuberculosis.

The type classification was as follows:

| | | |
|---|---|---|
| Lithe type (pure) | 21 | |
| Verging toward medium | 5 | |
| Total | | 26 |
| Medium type (pure) | 15 | |
| Verging to lithe | 5 | |
| Verging to stout | 5 | |
| Total | | 25 |
| Stout type | 3 | |
| Total | | 3 |

For practical working purposes, and especially when there existed postural defects, the lithe to medium group were kept with the pure lithes, and the medium toward stout, who were usually a little slow, were worked in the stout group.

Grouped physiologically, fourteen classed as wholly inadequate and five not normal, but showed marked improvement so that they were expected to be out of the inadequate group during the year. Nine were in a medium group, not especially inadequate but still not wholly adequate for various reasons. In this group a few were nervous and others needed attention to diet, teeth and tonsils. Twenty-three were classed as wholly adequate. Of the twenty-six lithe type of individuals, seven were adequate, thirteen inadequate and six under par.

Forty-six pupils were classified neurally. Twenty-two were found to be of the hyperactive type, ten of the hypo-active or slow acting type and fourteen were normal. Of the twenty-two hyperactive pupils, thirteen were of the lithe type and seven of the medium type. Two who were of the stout type were classed as overactive because of excitability and too rapid speech. Of the fourteen who were normal, six were of the lithe type, seven of the medium type, and one of the stout type. In the hypo-active group three were of the lithe type and seven of the medium type.

This grading of neural fitness in so small a group can readily be done upon the personal knowledge of the director who is handling them, influenced also by findings of teacher, nurse, or doctor. It is of value chiefly in affording more protection, particularly to the overactive group who need to conserve nerve force. It is safest in the consideration of group activities to modify them so that this larger percentage (almost 50 per cent) may not be injured or unnecessarily allowed to overwork.

The following classification was made of postural deviations:

SUMMARY—NUMBER OF PUPILS SHOWING DEVIATIONS

| | | |
|---|---|---|
| Head | | |
| Tilt to left | 1 | |
| Tilt to right | 4 | |
| Deviation from mid line to right | 1 | |
| Rotated to right | 1 | |
| Total | | 7 |
| Shoulder Girdle | | |
| Left low | 7 | |
| Left high | 10 | |
| Rotated left back | 2 | |
| Rotated right back | 2 | |
| Round shoulders | 2 | |
| Shoulder girdle overhanging | 1 | |
| Total | | 24 |
| Scapulæ | | |
| Separated first degree | 17 | |
| Separated second degree | 24 | |
| Total | | 41 |

| | | |
|---|---|---|
| Scapulæ—*Continued* | | |
| Prominent first degree | 10 | |
| Prominent second degree | 1 | |
| Total | | 11 |
| Marked rotation | 1 | |
| Total | | 1 |
| Back | | |
| Hollow | 15 | |
| Round | 5 | |
| Relaxed | 1 | |
| Scoliosis | 11 | |
| Total | | 32 |
| Chest | | |
| Deformities | 2 | |
| Total | | 2 |
| Abdominal | | |
| Prominent | 5 | |
| Relaxed | 1 | |
| Total | | 6 |
| Body | | |
| List to right | 3 | |
| List to left | 8 | |
| Total | 11 | |
| Pelvis | | |
| Right high | 11 | |
| Right low | 3 | |
| Total | | 14 |
| Legs | | |
| Bowlegs | 6 | |
| Knockknee | 17 | |
| Back Knee | 6 | |
| Tibial torsion | 7 | |
| Inward rotation of thigh | 4 | |
| Right leg short | 2 | |
| Left leg short | 3 | |
| Total | | 45 |

| | | |
|---|---|---|
| Feet | | |
| Pronated ankles 1st degree | 36 | |
| Pronated ankles 2nd degree | 12 | |
| Total | | 48 |
| Depressed arches 1st degree | 15 | |
| Depressed arches 2nd degree | 11 | |
| Total | | 26 |

This chart illustrates very definitely the deviations which may be found in any group of children of elementary school age. Note that the greatest number—forty-five out of fifty—had foot and leg deviations, forty-one scapular deviations, and thirty-two back deviations.

In order to estimate the effect of group work on group needs the postural faults were considered on the basis of degrees of deviation. The total number of degrees represented the group faults. The mid-year examination, after a modified program of activities, showed 41% less degrees of deviation present. Foot and leg alignment showed the greatest gain and improvement in nutrition came next. There was an all-round improvement in postures and group health with an increased interest in the related activities.

### Classification for Corrective Physical Education—Pasadena City Schools

A Summary of the Classification for Physical Education in Pasadena City Schools (Boys and Girls—Elementary—Girls—High School and Junior High School) indicates the same urgent need. (Taken from Annual Report of Regular and Corrective Physical Education 1926-27, Claire Colestock, Assistant Director of Physical Education, Pasadena City Schools, and from the Annual Report of Corrective Physical Education 1926-27, Hazel Cooper, Corrective Physical Education, Pasadena High School):

ELEMENTARY—BOYS AND GIRLS

| | |
|---|---|
| Enrollment (in all Schools) | 10,572 |
| Regular (in all Schools) | 9,782 |
| Corrective (in 15 out of 20 Schools) | 590 |
| Rest—approximately (in all Schools) | 100 |
| Referred to Dispensary or Orthopædic Surgeon | 33 |

Fourteen of the thirty-three cases referred followed the recommendation to see an orthopædic specialist. These cases included third degree flat foot, tight hamstrings, knockknee, pigeon toes, scoliosis, spastic paralysis, restricted arm movement, infantile paralysis and dislocation of the hip.

JUNIOR HIGH SCHOOL—GIRLS

| | |
|---|---|
| Enrollment | 1,707 |
| Regular | 1,381 |
| Corrective and Rest | 326 |
| Referred to Dispensary or Orthopædic Surgeon | 28 |

Seventeen of the twenty-eight cases referred followed the recommendation to see an orthopædic specialist. These cases included third degree flat foot, ptosis, spastic paralysis, torticollis, endocrine dysfunction, scoliosis and overweight.

HIGH SCHOOL—GIRLS

| | |
|---|---|
| Enrollment | 1,520 |
| Regular | 1,163 |
| Corrective | 242 |
| Rest and Nutrition | 115 |
| Referred to Dispensary or Orthopædic Surgeon | 13 |

Eleven of the thirteen cases referred followed the recommendation to see an orthopædic specialist. These cases included hallux valgus, third degree flat foot, other foot conditions (joint disturbance), several cases of scoliosis, one scoliosis with suspected tubercular spine, lordosis with low backache and scoliosis with an obscure early history of anterior poliomyelitis.

NOTE: Throughout the year 112 girls were assigned to rest room for periods varying from two weeks to six months for temporary causes, as, sprained ankles, convalescence from acute illness, etc. (From Report Medical Examination, Pasadena High School and Junior College, June 1927, Gertrude Seabolt, M.D.)

The total number of cases referred includes only those cases which could be benefited by corrective physical education. Medical cases with defects in sight, hearing, old anterior poliomyelitis cases, etc., are not included in this list. For disposition of these students see Classification, Chapter XIV.

## Studies in Posture Indicate Specific Needs

The reports submitted from Universities, High Schools and Elementary Schools, taken from studies in posture made in the East, Middle West and Western parts of the United States, and in Northern and Southern California, all agree in illustrating pertinent facts as to posture problems and the outstanding need for more specific programs of physical education.

## The Need Most Urgent in Elementary Schools

It can readily be appreciated that the really appropriate place for a corrective program is in the elementary schools. Its elaboration here would mean a far greater accomplishment and take a load from future high school and college departments. In fact, properly handled, there would be many less weakened and handicapped students in high school, and still fewer in college, if a sensible and consistent program of *physiological* more than athletic value were established. School administrators will have much to answer for if they persistently close their eyes to the fact that a majority of their charges have deficiencies, which, if uncorrected, will lead to unfitness in later life.

There are marked physiological and anatomical advantages in beginning remedial work during early childhood. The interest is much keener, the competitive spirit in athletics does not exist to so marked a degree, and the possible gains and improvement are obtained more quickly. The taxpayers' money should be spent on more and better gymnasium equipment for the elementary schools, and better trained physical directors, and not so much for the benefit of the physically fit in high schools. It is certainly a far higher goal to correct and improve many for life's battle than to give specialized training to a few whose chances for health are already well established.

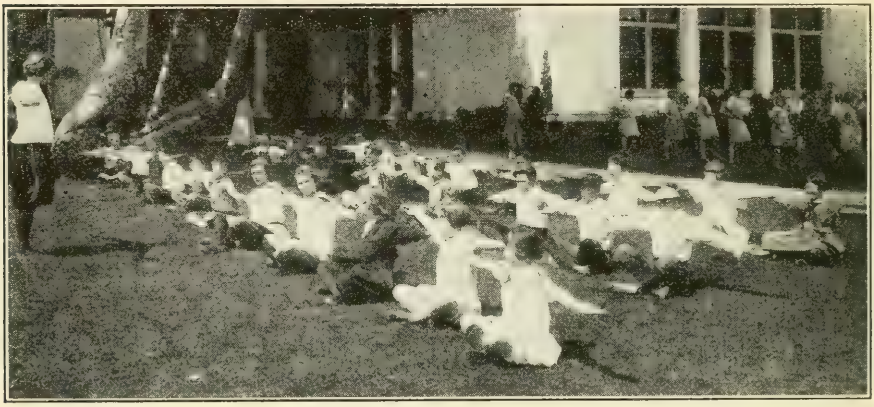

FIGURE 2

Elementary Group Corrective Work, Claremont, Cal.

Teachers and directors of elementary grades and junior high schools should realize the importance of corrective work at this age. In fact, practically all of the physical training at this time is remedial or preventive. The needs of growth and health, as well as the consideration of growth divergencies, call for the adaptation of activities, both recreative and formal. This can be done on broad lines and in a negative fashion by eliminating improper and questionable activities for this age, even if positive values are not put into the work. A very great many highly nervous, excitable and undernourished children need a rest period in recumbency rather than any gymnastic exercise. They should not be allowed to take the same work as the mass, or to have uncontrolled participation in indiscriminate games.

### Responsibility for Solution of the Problem

How then can we best attack a problem, the solution of which is so urgently needed? It should be attacked from both ends. First, all supervisors, directors, principals and teachers of school children should be made to see that the need exists, and in such a way as to make each willing to acknowledge and accept responsibility for his or her share. Secondly, all schools, colleges, and centers of physical education work should be encouraged to develop more clinical facilities for practical work in connection with those branches of the medical profession most directly concerned with nutritional, postural and growth problems.

There is at present a general disregard of anthropological elements and physiological factors by school administrators and teachers. This is shown by lack of appreciation of the fact that different types of children show very different reactions and needs, and must not all be given the same instruction or receive the same training. This disregard of some of the simplest and most evident physiological factors, to say nothing of very limited experience of a majority of teachers with pathological or border line cases, reduces very materially the constructive value of the work done by the average teacher, if we consider corrective values in physical education instruction. The usual methods pursued demonstrate that the stronger and more apt pupils are weeded out and developed along athletic and gymnastic lines.

This may make possible the development, each year, of winning teams, successful pageants, excellent gymnastic exhibitions, etc., all of which may run true to some eminently traditional form, exalt the school and instructor, and develop the strong. Is this fair to the weaklings for whom there is little time left, and for whom the taxpayers' money should be spent just as much, if not more, than for the strong ones whose need is less?

The development of physical strength and prowess in high school or college, or the winning of medals or cups, does not save the man or woman of forty from the need of resorting to the physician or surgeon for backache, neuritis, fatigue, eyestrain, constipation, indigestion, cardiac insufficiency, glandular insufficiency, or other functional faults. There should be wise and intelligent guidance to modify the applied methods designed to reach the physiological needs of all students.

### Coöperation of All Departments Recommended

Our first accomplishment then, as stated, must be the conversion of the whole educational institution to an ideal physical education which shall include such practical teaching along lines of hygiene, growth, physical accomplishment and expression, as will form in the student habits along lines which will hold him as an anchor during life's critical periods, especially from forty to fifty. Every teacher in every department must realize that thirty minutes of "gym," even given every day, cannot avail in an attempt to establish correct memory patterns of posture. If, as is usually the case, students are allowed to become indifferent, or to slump from fatigue or laziness in the classrooms, much of the value of what has been accomplished by physical training efforts is neutralized.

A coöperative effort in the establishment of traditionally ideal habits is essential. In the English department, theses on subjects in physiology, physical education, or hygiene should be required, and should be credited in both departments. There should be posture studies in the art department, and studies of play, rhythm, and body expression in the music and dramatic departments. In home economics, attention could be given to sanitation and to the relation of house furnishings (especially chairs) to physical and postural welfare. In the domestic science department special stress could be laid on the value of certain foods in relation to growth and the correction of growth faults. In the physics department, coöperation with the physical directors might result, for instance, in an outline and study of body balance and the influence of gravity on posture and motor control, such as making a practical demonstration of laws of levers. The chemistry department could contribute some simple but pertinent facts in reference to mineral metabolism in the body, especially relating to the use of lime, phosphorus, iodine, etc., to cellular needs and the maintenance of alkaline balance so essential to good physiological function. The manual training department is a wonderful laboratory, in which many a child finds himself, and is enabled to demonstrate ability for which he has received no previous credit, because no other department has supplied the needed outlet for expression or for "the motion which accompanies emotion," as some one has tersely expressed it. This department, from a psychological standpoint, could be almost a therapeutic branch of the physical education department, using the term in its broad application in reference to the child, rather than in an administrative sense.

In schools that have agricultural departments, there should be also a liaison of the closest kind with the physical education department. From studies in animal husbandry, breeding, type classification, etc., can be drawn lessons which have great value from the standpoint of sex hygiene and physical development. These studies afford rational opportunities for natural discussion of subject matter which the physical director recognizes as of vital importance to his department.

The departments of biology, zoölogy, comparative anatomy, physiology, and bacteriology, should all join in furthering the program of health education, the development of which would heighten, in a rational way, the pupils' interest in the mechanics and functions of their bodies, and for this study they should receive appropriate credit.

The department of physical education in all of its lectures, studies, examinations and activities, should take advantage of all the propaganda work and influences instigated by the other departments, and should devise ways and means of elaborating these avenues of contact and enlarging the scope of its activities.

### Physical Education a Department of "Mental" as Well as "Physical" Training

The day is fast disappearing when the department of physical education is considered the "play department" of an institution. The time is ripe for realizing it as a real part of the educational system, and for elaborating the mental training possible in this department, in order to obtain higher values in the development of the student's impression and expression mechanisms. Two things are essential for the accomplishment of such a result. First, to make the work of sufficient interest and value to arouse the student's willing coöperation. Secondly, to give him academic credit for all special efforts he makes, both in the participation of activities, and studies along lines of health and hygiene, such as have been suggested above. Students who are below par should be required to take a special course in fundamental corrective work, and if they improve themselves sufficiently to go on into more strenuous activities, they should be appropriately rewarded by credit.

FIGURE 3

Corrective Drill, Grades 5 and 6, Longfellow School, Pasadena

### Adaptation and Modification of Activities

If then, the regular activities of the physical education department have been unable to produce the desired result in influencing the growth of the child towards normal, or correcting the deviation from normal which already exists, it is quite apparent that some definite step must be taken to meet the situation. (See Statistics, page 5.)

The establishment of a department of corrective physical education, through which these pupils needing correction must pass, is certainly a step in the right direction. The criticism so often made that the corrective problem is one which can only be solved by individual correction, must be met by the establishment of methods suitable for dealing on a large scale with the deviations common to large numbers of children. In other words, as we see it, *it is essential to modify any or all physical activities to meet the needs of the majority of the group.* If the percentage of foot and leg deviations, or back deviations, is so high, varying anywhere from fifty to seventy-five per cent, it is certainly the part of wisdom to modify any activity to obtain the highest corrective value, and to lower the detrimental factors in the application of these activities.

Following the examination of any large number of students, it is quite essential for the physical directors to make a definite analysis of the percentage of various types of postural deviations. It will require only a little thought to show the possibility of modification of the ordinary activities necessary to meet certain major needs. Even on the basis of broad general principles, any form of physical activity can be slightly modified and made of increased value in the meeting of these major needs.

# CHAPTER II

## THE INFLUENCE OF POSTURE ON GROWTH AND DEVELOPMENT

## SKELETAL FACTORS OF INFANCY AND CHILDHOOD

Many of the faults in growth that appear in infancy and early childhood have a tremendous influence on the development of the boy or girl in later years. The posture problems of the Elementary, Junior, and Senior High School age cannot be thoroughly appreciated or understood without some knowledge of the background of these conditions in the early years of the child's life.

### Infancy

The most glaring abnormalities, or congenital defects, will be noted at birth by the attending physician. However, there are a few simple conditions which should be noted in the first few weeks, but are often overlooked. These are a mild type of clubfoot, bowlegs, and knockknees.

The sole of the foot turned in, with a failure to make normal movements outward denotes a tendency to clubfoot. It shows up in the form of marked pigeon toe during the walking stage.

To test the legs for knockknee, hold them extended side by side. The inner prominences of the knees and ankles should touch each other. If the ankles do not touch when the knees do, knockknee is present. The degree is measured by the distance the ankles are apart. If the knees do not touch and the ankles do, then bowlegs exist in both the thigh and the leg (femur and tibia). The shin bones are normally bowed a certain amount but not enough to throw the ankle joint and knee joint out of the same plane.

To test for an abnormal amount of curve in the shin bone: have the child seated, place a flat surface such as a book against the sole of the foot. Exert a slight pressure upward, and it will be noted that the inner side of the foot will bulge inward and the ankle bone apparently be more prominent. In other words, a line drawn from the middle of the kneecap through the ankle joint at right angles to the book cover will show too much of the foot outside this line. This condition is a very common factor in producing increased bowing after the walking stage. By thrusting the weight too far inward over the foot it becomes impossible for a correct arch to form. Consequently, there develops a predisposition to arch trouble, flat foot and knockknee later on.

**Walking Stage**

This should preferably have been preceded by several months of crawling on all fours. This strengthens and develops the thigh and lower back muscles so that when the upright position is assumed there will be greater stability.

Children should not be encouraged to walk early. Let them come to it themselves. Do not worry if they do not walk before two years old. If a child is heavy, or the bones, ligaments, and muscles are not yet sufficiently developed, nature will herself retard walking. One of the most important things to consider at this age, as well as later, is proper shoes. Better let the child learn to walk barefooted than to put on the usual flimsy paper soled shoes which are round on the bottom. Set one of these shoes on the table and see how the least movement will make it rock. Is it any wonder that such a shoe increases the leg strain in the effort to steady three wobbly joints—hip, knee and ankle—over an undeveloped foot? Flat soled shoes are recommended, because, although the weight of the shoes is greater, the strain on the balancing muscles is much less.

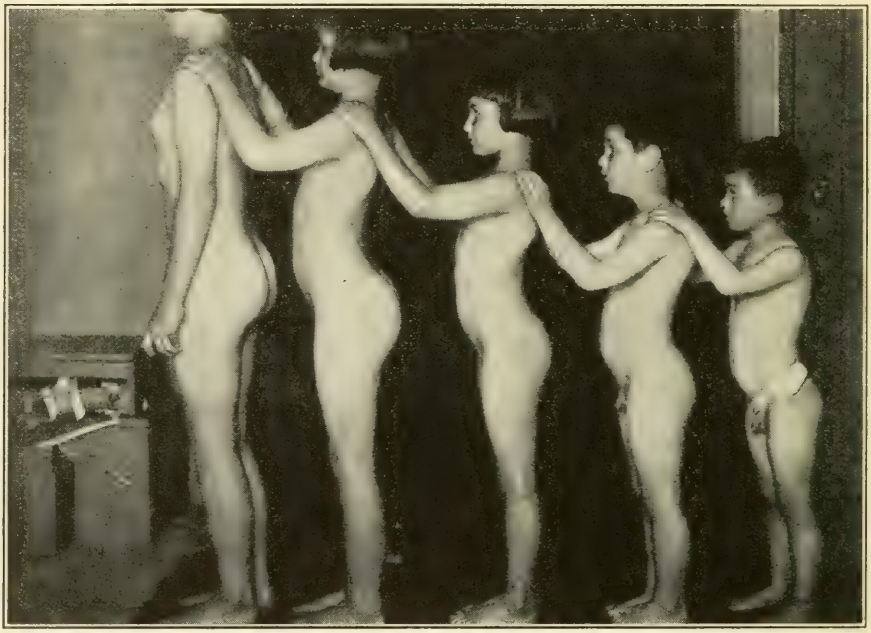

FIGURE 4

Growth Faults—Raised in Orient

All babies are flat footed, but the important point for consideration is whether or not they will stay that way. Here the question of leg balance must be investigated. To test this have the child stand, pass a string from the tip of the hip bone through the middle of the kneecap. This should fall through the middle of the ankle joint and into the foot just between the first two toes. If, instead, it falls to the floor to the inside, or even through the inner ankle bone, the body weight is being incorrectly borne. It is the law of growth that bones "grow in accordance with the way the weight is borne." Consequently, we expect the foot to develop that way. We call this "potential flat foot." Its correction and the prevention of further disturbance is brought about by keeping the inner border of the heel of the shoe thickened one-eighth to one-fourth of an inch more than the outer one. This throws the weight outward and makes the outer border of the foot sustain it. The bones on the outer border harden earliest and are thus prepared for weight bearing, whereas the keystone of the arch on the inside hardens last after the arch is made.

The pattern of many children's shoes is made too short in the back seam, and the shoe tips backward. This is apt to induce or make worse the condition called "back knee," which is due to stretching of the back ligaments of the knee joint. This allows the leg to bend backward from the vertical line. This may be corrected in nearly all cases by adding to the shoe a regular heel from one-half tc three-fourths of an inch thick, or sufficient to make the child stand with the legs straight. This must be kept up, as with all other corrections, from one year to several years in order to obtain proper control of growth.

A word of caution regarding the proper foot position in walking is needed. For generations people have been taught to toe out. This has, to a great extent, caused many defects in feet and legs. These defects have been greatly accentuated by the faulty footwear which has so long been in vogue. In taking histories of cases suffering from foot troubles of various kinds, it is a very common occurrence for the patients to state that their parents kept continually trying to make them "toe out" in walking. This was probably the very reason why they developed weak feet that necessitated surgical attention. Remember that the straight foot walk is normal and do not attempt to alter it. A moderate degree of pigeon toe is far preferable to the out toe position. It is a strong position, whereas the out toe is bad in that it induces knockknee, inward twist of the legs, and weak or flat foot.

### Childhood

During the period from five or six to eleven or twelve years of age many of the defects in posture, which have not been evident previously, begin to show up. Other defects peculiar to this stage begin to appear. These are: round or drooping shoulders, round, hollow, or flat backs, and lateral curvature of the spine.

The question of clothing is of utmost importance. All garments hung from the shoulder should be cut high in the neck, especially behind, in order to let the weight be borne on the root of the neck and not drag down the tip of the shoulders. Garter and corset waists need particular attention in this regard because of the added constant downward pull of elastic straps fastened to them. In cases where there is already considerable droop to the shoulders, garters should be fastened to the girdle instead of to the waist. Boys' coats should not be fitted in the drooped position of the shoulders, but rather with the shoulders held back in order to induce a good position.

The subject of shoes is most important, as so many faulty positions of feet and legs may be caused, or perpetuated, by ill fitting or faulty ones. Shoes should be straight lasted, that is straight on the inner border with broad, low heels, full wide toes, and broad shanks. Shoeing for boys is not so difficult because the lasts for boys' shoes are made more nearly foot form.

When the arches seem flattened, if the ankles and knees are prominent on the inner side, the heels should be raised one-eighth to one-fourth inch on the inner side. This holds the weight on the outer border and helps to make the wearer toe straight ahead. In all gymnastic work, in marching and walking, this position should be insisted upon. Children of the weak postural type should not be allowed to go barefooted except for short periods in play.

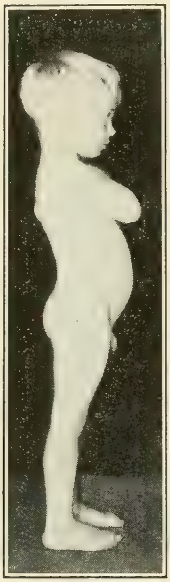

FIGURE 5

Boy 6 — Hollow Back — Protruding Abdomen

## Adolescence

Conditions in this stage differ but little from those already mentioned except that they are seen to be more exaggerated and often the very slight deviations of earlier years show up as very real deformities during these ages. The slight lateral curvature with one shoulder higher and one hip just a little more prominent making a single, or C curve during childhood will probably change to a double, or S curve during the adolescent period unless proper attention is given to it. Nature in her effort to establish balance makes this secondary curve to compensate the disturbance of balance.

It is at this age that girls begin to put on brassieres. Stylish modifications of brassieres, corset waists, so called corselettes, girdles, etc.; especially when worn by stout or rapidly maturing girls, have, in many instances, deleterious or serious effects. Such garments as combined brassiere and girdle with hose supporters are especially harmful in that both the pull of the garters as well as the downward pressure on the breasts exert a direct pull downward and forward on the shoulder girdle. This often greatly accentuates fatigue slumps.[1] Very often stout type girls and women are fitted with a short corset which extends only an inch or so above the waist line. This is done with the idea that it allows more freedom of motion to the trunk. The constriction coming about the waist line tends to keep the abdominal and pelvic organs down. Especially is this true with the relaxed round shoulder or round back types. The internal organs are suspended from the spinal column by ligamentous attachments. With the spine erect, these attachments draw the organs up into position; with the spine drooped, the organs are lowered. Now, with constriction about the waist, there is a constant interference with this upward lift and eventually the back position becomes fixed in the faulty lines.

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[1] Lowman: "Heavy Breasts as a Factor in the Production of Faulty Posture," *American Medical Association Journal*, January, 1922. Vol 78, p. 173.

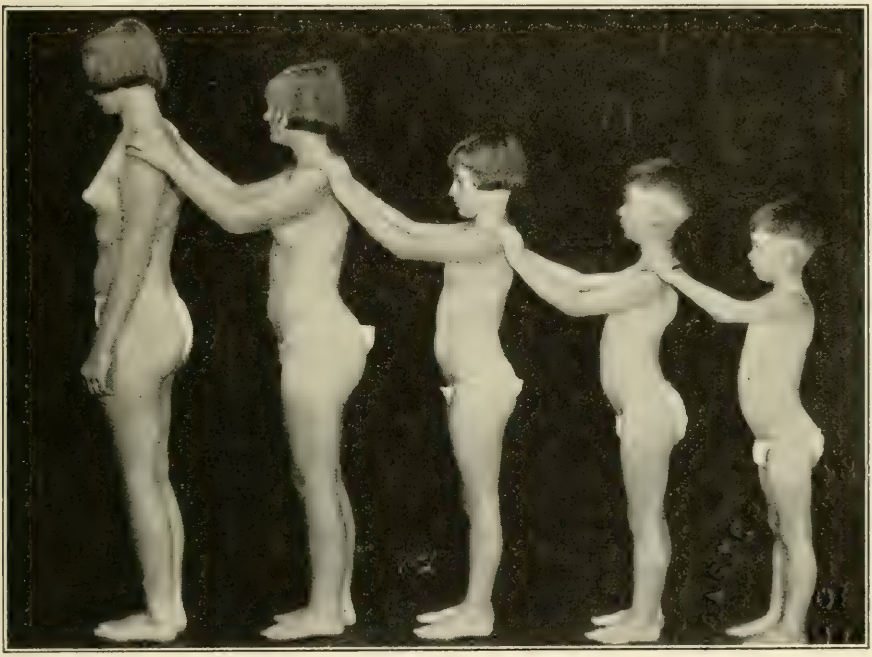

FIGURE 6

Correction in Pre-adolescence Important. Compare Figure 4

Probably the attention to correct shoeing at this age is about as important as any other consideration. Moderate degrees of weak flat feet and leg deviations become greatly increased during the adolescent period. This is chiefly because of increasing weight and also increasing activity. General athletics, and games and sports requiring running and jumping, like tennis and basket ball, require the use of the feet and legs. These will develop and strengthen them in the faulty positions if not prevented by proper shoeing.

## SIGNIFICANCE OF GOOD POSTURE

### Posture and Personality

The usual aspects of the subject of posture brought forward are those of health, athletic prowess and good looks. The influence of posture on personality and the effect of both, in relating the individual to a wider circle of usefulness and human relations is just beginning to be noticed and appreciated.

When one stops to analyze the situation, it becomes apparent that the old adage of "Actions speak louder than words" is very apt. Our actions give direct evidence of our mental and nervous processes, either a direct motor response to a mental stimulus or an indirect response through reflexly controlled neural arcs. These indirect habitual responses to given stimuli which evidence our behavior in any given situation, indicate more definitely than anything else what we really are and how we affect those about us.

If we think of our muscular system as actually an extension of the brain mechanism we see more clearly why this ancient adage is so appropriate. All one's instinctive acts and movements are conditioned by emotions and these feelings are expressed by actions. Stanley Hall's expression "There is no motion without emotion," is a very correct observation. When we think of body posture as being the result of a continuous muscular action it becomes clearer that it may thus be also a definite expression of personality.

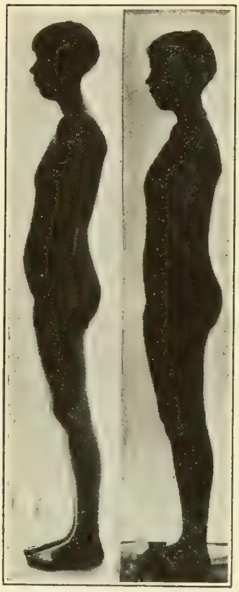

FIGURE 7
Posture and Personality Correlative

A slouchy, relaxed, fatigue posture, certainly doesn't convey to one the same impression that an alert, wideawake, well poised body does. The fact that people instinctively size up or appraise others by what the body expresses, is a point worth driving home to students and taking to heart yourselves. Much of the forcefulness of the teacher's instruction may be lost on the students because there is an apparent lack of strength in his presentation. The ring of sincerity carried by proper and clean cut speech, plus the enthusiasm and vigor with which an alert personality presents a subject, certainly vitalizes it, and will "make it stick," whereas a poor voice in a weak postured individual can never accomplish as much.

### Posture and Health

Are not the successful people among teachers those who in general are healthy and vigorous, and in whom exists an attractive personality that makes it possible for them to "sell their line"? All teachers in an institution should recognize that they can and should personally accept a certain degree of responsibility for the Physical Education, Health and Hygiene activities of their school. There is usually too great a tendency to consider that every phase of activity which deals with the health status of the student is a matter for some other department, and a "let George do it" policy is prone to develop. The Physical Education Department should strive to win the continuous coöperation of every other department of the institution in establishing real traditions of sound health. The handling of the posture problem is a very definite indication as to whether such traditions exist and have a real motivating influence on the students.

It should be noted that improved organic function is evidenced at once by improved neuro-motor control and more facile response in the muscular system, to all sensory-motor stimuli. It is not fully enough appreciated by teachers in general, especially the younger ones, that a purely mental approach to the problem of education is apt to be a very restricted one in many instances. The physiological background of any student should determine many details of his education. The needs of the pupil's body, as well as of his mind, differ at different ages—varying most decidedly in accordance with his body type. The adequacy or inadequacy with which he is meeting health and growth needs, as well as his social and educational needs, varies also according to type.

## Posture Week—an Opportunity for Coöperative Effort of Departments

The organization of a "Posture Week," as made use of at the present time in many school systems, is one means of driving home Good Posture for all at all times. It is one occasion when the students can be made to feel that each teacher on the faculty believes in and is thoroughly coöperating with the Physical Education Department, in putting over a program promoting ideas and ideals for mental, as well as physical growth. (See Good Posture Week Suggestions, Chapter XXXI, page 477.)

For weeks before and weeks afterward the students should be made to understand that all teachers are backing this program because they realize that it affects their own department work directly. Each student should know that he cannot have as great a degree of success mentally, unless he develops a healthy body in which to house a real live personality. He must be made to see that nothing evidences this fact so much as his general carriage and the way he uses his body in expressing his thoughts and emotions, or in other words, his general behavior.

## Sex Hygiene

There is another important bit of teaching in connection with this work that is too frequently overlooked, or the opportunity for it is not recognized, and that is in connection with personal and sex hygiene.

It is almost a natural by-product of Physical Education, and the opportunity lies in the fact that when you interest the older boys and girls in developing beautiful bodies, you are provoking a legitimate curiosity which is not morbid but which is natural.

A talk to these older groups, pointing out that there occur definite changes in the organs of the body, in accordance with impulses generated by, and accompanying certain emotions, can bring home very important lessons. This approach can be elaborated until the correlation of educational activity—organic changes and motor action are shown. Certain spiritual values can be indicated in connection with the physical expression of the varying kinds and degrees of love, such as friendship, love of humanity, devotion of father and mother, loyalty to family, etc., leading on to the phenomenon of mating and the development of love, and its evolution, to marriage and home making.

As an illustration take any silhouette posture records or tracings and ask any boy which of these girls he would select for a wife; without fail one with an A posture will be selected by him. Ask any girl which girl she thinks would make the best chum or which boy the best husband, and the result will be the same. Why? Because the picture speaks—the mere evidence of correct posture affects us by making us read into the picture all the attributes and characteristics which are co-related with proper body carriage and alignment.

The mere suggestion of mating in connection with posture touches the "quick" and the student's thoughts are at once properly and legitimately turned to a more serious phase of the problem than would be occasioned otherwise. A reference only, even without elaboration, to certain parts of the body in relation to the fit or appearance of clothing acts similarly. For instance, mentioning to a girl that her clothes will not look well when one shoulder and breast are higher than those on the opposite side.

Project, for instance, the thoughts of these young people forward ten years. Let them think in terms of parenthood, and the factors of sex significance are nicely emphasized. For use then, to set them thinking, such items are important, and if during this Posture Week it becomes known that some qualified individual will give personal conferences to any student desiring further information, the way is established to put over the strongest factor in the Posture Week program for those of appropriate age.

## All Departments Should Feel Responsibility

Much of tremendous sociological import can be accomplished then, if any school faculty works toward making the most of such an opportunity. An especially good way is to subdivide the work so that different teachers can touch some phase of the problem in a rational manner in relation to their own subjects. For instance, the art department may make posters and dwell on the influence of statuary, pictures, etc. The

English teacher can require stories, essays, or library research on some allied subject. The department of dramatic art also has a wonderful chance to help in this regard. Physiologists, Hygienists, Coaches and Physical Directors, have, of course, an endless repertoire from which to draw. Such a concerted effort recurring yearly in various departments would establish traditions that in any four years ought to bear rich fruit.

All teachers should realize that the word ''posture'' as we use it does not connote a narrow, restricted view of the way the body is or should be held, but rather all the correlated facts indicative of the state of health and efficiency of the whole organism.

# CHAPTER III

## Fundamentals of Body Statics

### Correct Posture Defined

Good posture is correct body alignment, and may be defined as the correct relation of the body segments to each other and to their external environment. All of the ''bearings'' or joints should be in proper relation so that the muscles will pull in a normal line. The relating of the position of the body to its environment is accomplished largely through the visual mechanism, but the actual posture of the body in relation to its components, is maintained by impulses sent from motor centers of the brain. Judgment as to position, and control of the coördinating mechanism is based upon, or established through, various afferent impulses or sensations received from the skin, ligaments, muscles, and joints.

The development of strong musculature may not be conducive to the development of good posture. The more muscle power that is developed with the body out of line, the worse the posture may become. In this case, the muscles simply hold the body in the faulty position. The stronger the muscles are the more persistent will be the faulty posture of the body. Goldthwait defines ''Good Body Mechanics,'' as ''correct poise and control of the body with the normal functioning of every organ.''[1] Elements that enter into good posture must be considered from the point of view of the bony mechanism (joints), muscular mechanism and a neural standpoint. In establishing good posture, bones, joints, muscles, and nerves must be considered. Similarly, in treating faulty posture, bone and joint conditions must be corrected, weak muscles strengthened, and neural strain lessened. Finally, the aims of good posture should include the development of correct skeletal alignment and muscle tone, organic development, and neural control.

### Center of Gravity of Body

The center of gravity as defined by Lovett: ''In the erect position the center of gravity of the body lies in front of the ankle joints, which are held from dorsal flexion in this position by the gastrocnemius muscles. The center of gravity lies also in front of the knees, which are held in position by the hamstring and quadriceps extensor muscles. The

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[1] Thomas and Goldthwait: "Body Mechanics and Health."

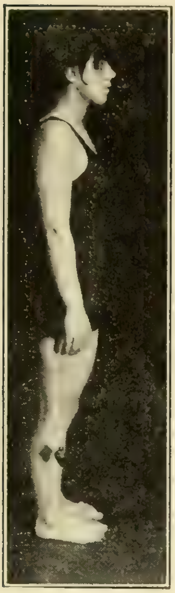

FIGURE 8

Anteroposterior Gravity Line—Head Slightly Forward

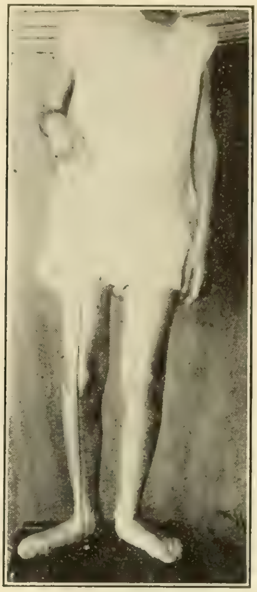

FIGURE 9

Gravity Line Showing Malalignment—Leg and Foot

center of gravity lies also anterior to the sacro-iliac joints and most of the vertebral joints.''[1]

### Gravity or Weight Lines of the Body

1. Anteroposterior or gravity line[2] strikes the following points approximately:
    a. In front of outer malleolus.
    b. Back of patella.
    c. Middle of great trochanter.
    d. Middle of tip of shoulder.
    e. Tragus of ear.

Anteroposterior gravity line is referred to in Bancroft's Vertical Line Test for Good Posture.[3]

2. Lateral Gravity Lines:
    a. Midway between heels.
    b. Through cleft between buttocks.
    c. Through middle of spine.
    d. Through occipital protuberance.

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[1] Lovett: "Lateral Curvature of the Spine and Round Shoulders," p. 199
[2] Davis: "Applied Anatomy."
[3] Bancroft: "Posture of School Children."

3. Foot and Leg Line:
    a. Anterior superior spine of ilium (approximately).
    b. Middle of patella.
    c. Middle of ankle joint.
    d. Between first and second toes.

Deviations from anteroposterior and lateral lines indicate that the weight is not being borne entirely on bony columns. The amount of tension on the balance muscles and ligaments is in direct ratio to the amount of deviation of the part to which it is attached. In checking good posture with gravity line readings, always read the plumb line from below up, noting the amount and direction of deviation of any point or segment. (See Examination to Determine Correct Alignment, Chapter VI, page 50.)

### Elements in Correct Standing Position

1. The position of the segments of the body in the standing position—"Attention," "Habitual," "Rest."
    a. Fundamental standing position "Attention."
        Head up.
        Chin in, neck back.
        Abdomen flattened below.
        Back with normal physiological curves.
        Shoulders in correct relation to gravity line.
        Knees straight.
        Feet toeing forward, one to two inches apart, weight on outer border.
    b. Fundamental standing position—"Habitual."
        Position of the body segments as for "Attention." The habitual standing position requires correct body alignment with the best alignment of the segments with the least possible conscious attention.
    c. Fundamental standing position—"Relaxed" or "Rest" position.
        Position of body segments as for "Attention" except feet should be separated one to two feet, toeing forward, weight equally divided.

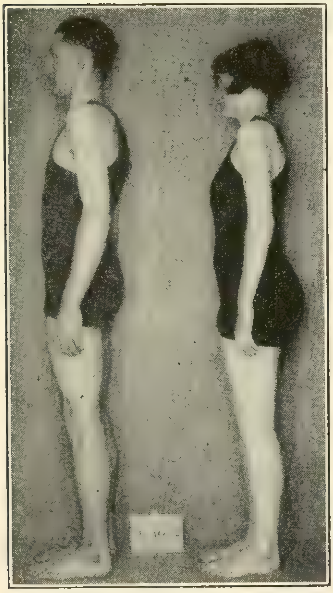

FIGURE 10
Correct Standing Position

2. Weight of body borne on a three-point perimeter.
    a. Heel.

b. The junction of the fifth metatarsal and cuboid.
c. The heads of the metatarsals.

### Posture Cues

Head up!
Chin in, neck back!
Abdomen flat!
Back straight!
Shoulders relaxed! (not stiff or thrown back).
Knees straight!
Feet parallel, weight on outer border!

### Elements in Correct Sitting Position

The positions of the segments of the body in the sitting position are:

a. Reading or rest position.
    1. Head up.
    2. Chin in.
    3. Abdomen flat.
    4. Hips, knees, ankles, at right angles.
    5. Feet flat, toe straight ahead.
    6. Lower back touches back support.
    7. Shoulders relaxed. Upper back also rests on back support.
b. Active or work position (writing, drawing, etc.). Same as "a," except lean forward at hip joint. (Don't bend at waist.)
c. Recommended change for relaxation and relief, as a variation of a set position to relieve the strain of holding one position too long. Cross feet (not knees) at the ankle joint. Rest the feet on the floor, holding the outer border in contact with the floor—toe straight ahead or in.

### Correct Seats for School Children

Lovett gives results of a study made by the Boston School House Commission reports 1901-5.[1]

1. "The height of the seat from the floor should be such that in sitting the feet rest on the floor. Too high a seat produces pressure on the back of the thighs; too low a seat induces too much flexion on the lumbar spine.
2. "The slope of the seat should be backward and downward about three-eighths of an inch. The depth of the seat should be about two-thirds of the length of the thighs. The width of the seat should be that of the buttocks. Some concaving of the seat is comfortable, but not essential.
3. "The back of the seat should have a slope backward of one in

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[1] See Lovett: "Lateral Curvature of the Spine and Round Shoulders," p. 55.

twelve from the vertical line (Saxon regulations). The more modern expression of this is found in two back supports, one low down, one-half to one inch in front of the back edge of the seat, and a second higher up, one and one-half inches behind the back edge of the seat. But in a nearly balanced sitting position a relatively low back support is ample and the upper one not required.

4. "The height of the desk should be such that the back edge allows the forearm to rest on it naturally with the elbow at the side. The height of this edge from the edge of the seat is known technically as the 'difference.'
5. "The slope of the desk has been advocated at all angles from 0 to 45 degrees. The theoretically best slope for reading is at least 30 degrees, but this is practically too steep and books slide off, and it is not practicable for writing. From 10 to 15 degrees is the usually accepted inclination. The proper distance of the eyes from the desk is from 12 to 14 inches. The width of the desk is immaterial, 22 to 24 inches being the usual size."

## Elements in Correct Walking Position

The positions of the segments of the body in the walking position are:
Head up.
Chin in.
Abdomen flat.
Toe straight ahead.
Arms swing naturally and easily at sides.

In walking the foot strikes the floor, heel first very lightly, the outer border of the foot second, and toes third. The interval of time required for the various segments to touch the floor should be so slight, that the entire surface may seem to be in contact at the same time. The weight of the body should be borne as in the standing position on a three-point perimeter, the heel, the junction of the fifth metatarsal and cuboid, and the metatarsal heads. Correct body alignment and correct alignment of the segments should be maintained. (See Gravity Lines, page 31.) The step should be light and springy with a strong push off from the ball of the foot.

## Elements in Correct Running Position

The positions of the segments of the body in the running position in running for a car or in a fast walk, are the same as in the walking position. In running the foot strikes the floor, heel first, very lightly, the outer border of the foot second, the toes third. The body should be inclined somewhat forward. (Body bent forward places the gluteal muscle group on a slight tension and therefore is the best and strongest position for action.) A long stride should be cultivated. The floor should be gripped firmly with the toes. The arms should swing naturally at the sides.

*Elements in Coaching Running, That May Be Made to Have Corrective Value.*

1. Practice the crouch start. Do not straighten the body for two or three steps. Body bent forward places the gluteal muscles in the strongest position for immediate action. (In running body inclined somewhat forward.)
2. Feet and legs parallel. Feet may be in slight "toe in" position.
3. Heels should strike first, although very lightly, heel, arch, toe, as for walking. Exception Sprints—Sprint work not good for weak feet unless "toe in" position is used to strengthen the arch, or unless sufficient corrective foot work is given to compensate the weakening effect.
4. Grip the ground with the toes.
5. A long stride.
6. Let the arm swing naturally, opposite arm and leg operating together.
7. Keep head up and look straight ahead.
8. Arms and legs move straight forward and back. Do not lose energy in any motion from side to side. Do not throw rear foot up behind.

### Position of Body Segments in Climbing—Stairs, Hills, etc.

The positions of the segments of the body are the same as in the walking and standing positions, except that the trunk is bent slightly forward at the hips. Trunk bent forward places the gluteal muscles in the strongest position for action. In "trunk bent forward slightly" the action of propulsion forward and lifting upward are combined to get the maximum lift with the minimum effort. The body should be balanced over the legs to get the maximum lift of the legs.

## RECOMMENDED LYING POSITIONS

### Lying Positions, Rest and Relaxation

1. Backward Lying Position.
   Lying on back with hands relaxed at sides, leg fully extended.
2. Hook Lying Position.
   Backward lying with knees bent. (See Fundamental Starting Positions, Chapter XVIII, page 188.) This position is restful for people with tendency to hollow back.
3. Side Lying Positions, R. supporting knee bent.
   Lying on R. side, R. arm extended under head, L. leg fully extended in line with trunk, supporting knee, R. bent at right angle. The L. arm relaxed and thrown back of trunk (gives

good chest expansion). (See Fundamental Positions, Chapter XVIII, page 187.)

4. Prone Lying Position.
   Prone lying position, head R. or L., legs fully extended, arms relaxed at side, pillow under abdomen. Specially good for hollow backs.

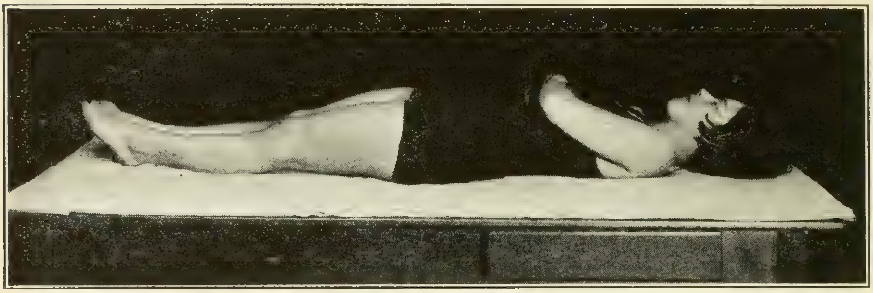

FIGURE 11

Backward Lying (Arm Raised to Show Lumbar Curve)

**Lying Positions, Sleeping—Without Pillow**

1. Side Lying Position R., Supporting Knee Bent.
   Lying on R. side, supporting knee, R., bent. R. hand to rear of trunk, L. arm at rear, or in front with elbow bent, the whole forearm resting on the bed to prevent the shoulder from dragging forward. Position gives opportunity for good chest expansion and good heart action.
2. Prone Lying Position.
   Prone lying head L. or R., arms relaxed at sides, legs fully extended.
3. Side Lying R. Both Knees Bent.
   Side lying R., both knees slightly bent and forward, arms as above under number one.
4. Backward Lying Position.
   Backward lying position, arms relaxed at side, legs fully extended.

**Lying Positions for Passive Correction**

1. Prone Lying, Pillow under Abdomen.
   Prone lying, pillow under abdomen to stretch thigh flexors. Especially applicable for hollow backs and relaxed abdomen.
2. Hook Lying—Arms Overhead.
   Hook lying, arms overhead or clasped behind head. Flatten lumbar curve and hold while legs are passively let down to extension to stretch psoas. Arm position raises rib cage and

stretches tight pectorals and adductors. For visceroptosis the same as above, body inclined toward the head on inclined surface. A pillow placed under the pelvis low enough to allow lumbar curve to sag, assists in increasing the value for either of these conditions and gives thigh flexors a greater stretch.

3. Hook Lying—Hands Overhead—Small Roll or Pillow Under Dorsal Area.

   Hook lying, hands over head, small roll or pillow directly beneath the convexity in the dorsal region for correction of round back or kyphosis.

   NOTE: To start with may not tolerate the roll and arms over head. In this case let arms rest at sides.

4. Side Lying R.—Right Arm Up—Supporting Knee Bent.

   Side lying R., right arm up, supporting knee bent, L. arm at side. Position indicated to stretch tight waist structures in left total curves.

# CHAPTER IV

## Body Types and Type Characteristics

In the application of exercises to meet individual needs, physiological type characteristics should be recognized and 'thoroughly understood. The terms applied to physiological types are Lithe, Medium, and Stout. Changes and adaptations according to type characteristics should be made, not only in the actvity program as prescribed by the Physical Education Department, but in the entire school and home program of activities of growing boys and girls.

### Lithe Type

The Lithe type individuals are characterized by lithe bodies, hyperactive muscles, and high tension nervous systems. They are the individuals, the mental types, who are ambitious and quick, and who have strong tendencies to overoxidize. They have overactive, mobile bodies, that are subject to many postural faults and organic weaknesses.

### Stout Type

The Stout type individuals have opposite tendencies and characteristics. They are slow acting, easy going, with low tension nervous systems. The individuals in this type are sluggish, they have low thyroid gland activity, and deposit fat more freely. They are more apt to be philosophical and phlegmatic, with peculiar tendencies to certain static or postural faults, largely incident to their obesity.

### Medium Type

The Medium type, or the type that may be considered the ideal normal type, has a position midway between these two and usually has an all-round well-balanced mechanism. The mental and physical reactions are in fair poise, and the organic resistance is much higher than in the Lithe and Stout types.

### Border Line Types

There are border line types that will fall in between these major groups, as, for instance, individuals who are neither stout, lithe nor medium. An underweight medium person should be classified and worked with the lithe group until physiological balance is obtained.

Later re-classification, the next semester or year, will place him where he belongs. Similarly an apparently nominally stout person may be in reality an overweight medium. As a rough working rule, classify then, in accordance with physiological need.

The greatest care should be exercised in grading and classifying adolescents. Growth changes are irregular and erratic. Six months is often long enough to make marked skeletal, as well as physiological alterations. These changes must be appreciated and met by intelligent readjustment and placement. For illustration, a boy of fourteen may be classified with the average medium group, but in a few months he may shoot up and become a stripling. For his own safety and protection he should be treated as a lithe type. Similarly a medium lithe girl of twelve may in a few months show pubescent changes, put on weight, increase all girths and become a pure medium type, which will probably be her ultimate normal.

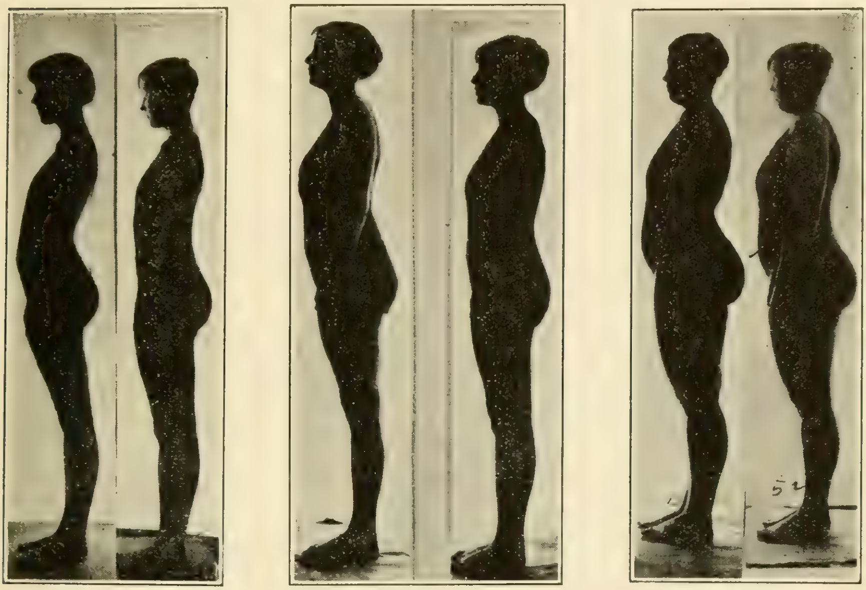

FIGURE 12
Types: Lithe—Medium—Stout

Similar extra precaution must be used in placing the tall and short, particularly of the lithe and stout groups. A tall lithe, for example, is in greater need of attention because of greater tendencies toward bad spinal posture, and the increased stress on the feet from the leverage of longer legs. A tall stout likewise adds to the above considerations the factor of increased weight.

Following is a summary of the main characteristics of the Lithe, Stout and Medium type individuals:

*Body Type Classification (Anthropological).*

1. Lithe type—Tall—Average—Short.
2. Medium: Tall—Average—Short.
3. Stout: Tall—Average—Short.

*Characteristics of Each Type.*

1. Lithe.
    - a. Bones small and slender. Face narrow and long. Hands and feet long and slender. Chest long and flat (often of type known as phthisical).
    - b. Posture, relaxed—fatigue slump.
    - c. Often visceral ptosis.
    - d. Physically overactive.
    - e. Metabolic rate high.
    - f. Nervous; hypertension; "temperamental" types.
    - g. Long slender muscles (weak from body mechanics standpoint).
    - h. High degree of spinal mobility (acrobats, dancers, etc., of this type).
    - i. Brant's "carnivorous" type: *i.e.* (for pursuit of prey or flight), built for speed and activity, etc.
2. Medium type.
    - a. The ideal (Greek) type.
    - b. Medium type bodies, well knit.
    - c. Girths in good proportion and good relation to each other.
    - d. Usually well balanced physically.
    - e. Glandular balance good; nutrition satisfactory.
3. Stout type.
    - a. Tending toward "herbivorous type."
    - b. Bones heavy and short: "broad backed."
    - c. Over weight for height.
    - d. Faulty fat metabolism.
    - e. Often hypo-thyroid or hypo-pituitary.
    - f. Often have flat feet and knockknees, hollow back, etc.
    - g. Slow reaction time; lethargic, etc.
    - h. The so-called "vital" type.
    - i. Not neurotic or emotional.
    - j. Muscles heavy and strong.
    - k. Built for endurance.

# CHAPTER V

## Technique of Examination

In presenting this examination detail we fully realize that some without special training in discrimination will not be able to make use of it in the limited time allotted. However, it is given in the hope that it will be useful as a guide and that it will show the importance of thoroughness in examining as an essential basis for classification and corrective procedure. If not used in its entirety, special portions which are more essential can be chosen from the data given.

Examination—gown opening in the back.

| | | |
|---|---|---|
| *Type* | Lithe Type | 1. Tall—Above average. |
| | | 2. Medium—Average |
| | | 3. Short—Below average. |
| | Medium Type | What is generally considered as normal. In other words, balanced growth. |
| | Stout Type | 1. Tall. |
| | | 2. Medium |
| | | 3. Short. |

Weight Age.

Height Standing.
Sitting

While still sitting take:

Head circumference (and other measurements if desired).

Chest.
  Inspiration.
  Expiration.

Epigastric angle girth.

Tracing of costal angle (epigastric) sitting relaxed—taken with lead wire and traced on face of record. (Indication of decreased lung ventilation as well as sagging of viscera, which should fill out this area, making this the thickest portion of the torso.) Specially emphasized by Goldthwait.

Abdomen.

Sitting, tape passing under anterior superior spine, relaxed position. This gives fullness of abdomen.

Breasts.

Observe type of brassiere, or make inquiry in regard to it.

Normal size—equal or not on two sides—make note of breast—shape—positions, etc.

NOTE: This information can be obtained from observation during the measuring of costal angles, etc. No comment or discussion is necessary unless the girl is sensible or unembarrassed, and her attention to the correction of some fault would be stimulated by the discussion.

Body length sitting:

- Episternal notch to table.
  - Relaxed.
  - With correction by push up.

STANDING:

- Plumb lines: (See Gravity Lines, Chapter III, p. 31).
  - Lateral (read from ground up) note deviation of:
    - Cleft.
    - Lumbo-sacral junction.
    - Mid lumbar.
    - Mid dorsal.
    - 7th cervical.
    - Mid occipital.
    - Front reading for head and eye deviation.
- Head position:
  - Tilt: Right—Left.
  - Rotation: Right—Left.
- Anteroposterior, note deviation from line of:
  - Patella.
  - Trochanter.
  - Shoulder.
  - Lobe of ear.
- Back:
  - Type (character or degree of fault graded as, slight—moderate—severe).
    - Round Flat Hollow
- Shoulder girdle:
  - Right or left shoulder high or low—rotation R. or L. back or forward.
- Scapulæ:
  - Prominent.
  - Wide. (NOTE: Must be approximated by examiner according to age.)
    - First degree—3-inch separation.
    - Second degree—3-inch to 5-inch separation.
    - Third degree—5-inch or over separation.

Scoliosis:

- Type:
  - First degree—Postural.
  - Second degree—Transitional.
  - Third degree—Structural.
- Tested by lying down. (Postural curves disappear on recumbency and suspension. (See Scoliosis, Chapter VII, p. 65.)

Kyphosis and Kyphoscoliosis—slight—moderate—severe.

Pelvic levels.

Anterior and posterior superior spines, right high or low (essential to check both). (See Pelvic Tilts and Torsions, Chapter VII, page 63.)

Crests, right high or low.

Legs:

- Measurement standing.
  - Anterior superior spine to internal malleolus excludes arch.
  - Anterior superior spine to ground includes arch.
- Weight line: Projected to test for pronation—note deviation away from first interphalangeal space. See Chapter III.
- Knockknees.
  - Slight first—space between ankles under 3 inches.
  - Moderate second—space between ankles 3 inches to 6 inches.
  - Severe third—space between ankles over six inches.
- Bowlegs.
  - Ankles together—same as in knockknee, but measure at knee.
- Torsion:
  - Note degree of deviation of mid knee axis from ankle axis. Test first with knees straight ahead or parallel, then with feet parallel.
- Feet.
  - Type of shoe worn.
  - Front arch. Normal. Depressed. Callosities.
  - Back arch.
    - Depressed.
      - First degree 1 inch below a straight line from internal malleolus to prominence of big toe.
      - Second degree 2 inches below line.
      - Third degree on the floor.

        NOTE: Some authorities reverse this gradation and call the complete flat foot 1st degree instead of 3rd degree.
- Toes.
  - Enlarged joints.
  - Hammer toes.
  - Corns.

Indices of faulty shoes and stockings.

Neural:
  Test balance and stability.
  Standing on one foot, eyes shut, record stance:
      Steady    Uncertain    Poor.
  Knee jerk—patella reflex, increased, decreased.
  Toe pointing.
    Stand on one foot, point as follows to marks 1—2—3—4 on a line in front of body 8 inches apart, returning each time to position. This is the Romberg test. Record—Good—Uncertain—Fair—Poor.
  Hands—Arm extended forward, spread fingers.
    Note tremor.  Fine—Coarse.
  Hand coördination—Touching finger tips in front from the arm extended position, eyes closed—record position sense.
    Good—Fair—Poor.
  Sensory test—Tactile  Thermal  Pressure.
  Muscular twitching or jerking movements.
    Coarse—Local—General.
    Regular tic or spasm—note type and location, lip, face, nose, arm, etc. (Observed during general examination.)
  Classify Neurally.
    Hyperactive.
      Slight    Moderate    Extreme.
    Hypo-active.
      Slight    Moderate    Extreme.
  Physiological classification (organic adequacy, *i.e.*, ability to meet ordinary demands of life). See Report Glendora Foothills School, Chapter I.
    Adequate
    Inadequate
    Or between
        Tending toward one or the other in accordance with condition of health.

NOTE: Do not lose the opportunity to have a frank discussion with student or parents. It is the best possible way to drive home important facts.

Don't neglect to call attention of physician, or those immediately involved in handling the case to the beginning evidences of oncoming pubertal changes, especially regarding weight, appearance, character of motor response, etc. Whole character of treatment may be involved.

Record also all evidence of retarded development, direct or indirect, of primary or secondary sex characteristics such as amenorrhea, dysmenorrhea, headaches (vicarious menstruation), cyclic peculiarities, unusual embarrassment, bashfulness, efforts at concealment, etc.

These facts may also wholly alter the character of treatment both physiotherapeutically and medically. Their disregard may spell failure in results.

Physiological and pathological faults: *Inspection tests.*

Head Type Round
Long—Dolichocephalic.
Position Broad—Brachiocephalic.
Tilt
Tip Facial type—
Lithe—Moderate—Stout.

Head and neck movements.
Limited—free—pain, spasm—range.
Sensitive areas—occiput—neck—face.

Eye—Vision—Reaction—Light Distance—Nystagmus.
Squint.
Near sight.
Signs of strain.
Bright or lusterless.
White sclera (seen in young children with poor nutrition).

Ear.
Hearing—Good—Dull—Deaf (suspect adenoid)—(Watch test—speaking test).
Position—of head in listening.

Teeth.
Condition—Good—Bad—Decayed.
Care—Clean or not.
Kind—Regular—Irregular—Serrated—Concave (Hutchinson's).
Spaced or crowded. Pituitary characteristic.
Mal occlusion—shape of jaw.

Nose and throat.
Breathing.
Speech—Stammer—Lisp.
Tone.
Sound.

Shoulder girdle.
Posture—Unlevel—Twist—Drooped.
Round—Rigid—Flexible (test by passively forcing shoulders back and note result).
Scapulæ—Wide—Prominent.
Movements—Limited—Free—Symmetrical—Strength.
Complaints.
Pain—neuritic—stiffness—spasm.
Bursæ involved—subdeltoid—subscapular—subcoracoid.
Musculature—Tone—Atrophy.
Paralytic involvement—spastic (birth palsy)—flaccid—(poliomyelitis).

Chest.
  Type.
    Long—Flat—Narrow—Pigeon—Tunnel—Barrel.
  Measurements—Girths.
  Tracings—lead tape—sagittal and horizontal—epigastric angle.
Breathing.
  Diaphragmatic function.
  Intercostal angle.
  Harrison's sulcus—Depression laterally over diaphragmatic attachment—common in rickets and malnutrition.
Breasts.
  Size—Normal—Firm—Flabby—Asymmetrical—Hypertrophied.
  Position—Normal—Relaxed—Pendulous.
Heart.
  Pulse rate.
    Regularity.
    Character as related to exercise.
Abdomen.
  Type—Hollow—Flat—Rounded.
  Musculature—test retraction and protrusion—note asymmetry.
  Ptosis.
  Hair distribution.
  Fat pads—indices of endocrine dysfunction.
    Inquire as to habits—constipation, etc.
Arms and Hands
  Muscle power—Range—Strength—Control—Tone—Nutrition.
  Paralytic findings—Spastic—Flaccid.
  Movements—joint limitation—range—cause.
  Neural reactions—see page 44.
Back.
  Type—Long—Moderate—Stout—Round—Flat—Hollow—Straight.
  Musculature—Tone—Flabby—Firm—Atrophic—Relaxed—Fibrillation—Twitching—Spasm.
  Tests for pain or sensitiveness—pressure on spine, or muscles
  Hyperextension—Passively from prone position to elicit spasm, or guarding.
  Hyper flexion test—Heel to buttock to elicit lumbar spasm.
  Bending forward—Adam's position.
    Limited or free.
    Recovery to position—Free or Painful—Straight or Twisted.
  Sideward bending.
    Limited or Free—Symmetrical—Painful.
  Twisting.
    Limited or Free—Symmetrical—Painful.
  Adam's position.
    Rotation.

Back.—*Continued.*

Hyperextension.

Pressure test to note muscle tone.

Spasm.

Pelvis.

Level.

Waist angles.

Anterior superior spines and posterior superior spines.

Height. Prominence R. or L.

Rotation R. or L. hip back or in front of normal plane.

Angle of cleft—Straight—Slanted.

Tests for Sacroiliac—Pressure for local pain.

Straight Leg test—Positive—Negative.

Lateral Pressure through ilia—to elicit pain.

Legs.

Lengths — Size—Differences—Muscle tone—Atrophy—Oedem (swelling).

Circulation—Varicosities—Color—bloated—red—blanched.

Skin.

Dry—Scaly—Scars—Eruptions—Perspiration.

Feet.

Position in standing—Arches—Ankles—Toes.

Size—Atrophy—Swelling

Color—Cyanosed—Pale—Red—Mottled.

Movements—Limited—Free—Painful—Sensitive Areas.

# CHAPTER VI

## STUDIES IN POSTURE AND GROWTH DIVERGENCIES

### Etiology

1. Congenital defects.
2. Nutritional.
    - Under weight.
    - Lack of quantity or quality of food.
    - Over weight.
    - Improper metabolism.
3. Growth Handicaps.
    - Skeletal weakness.
    - Muscular weakness.
    - Growth divergencies—tonsils—adenoids.
    - Overloading.
    - Wrong diet.
    - Fatigue.
    - Occupational.
    - Heavy head.
    - Glandular dysfunction.
    - Contractures (hamstring and heel cord).
4. Pathological.
    - Rickets.
    - Arthritis.
    - Tuberculosis.
    - Syphilis.
    - Malnutrition.
    - Osteitis.
    - Poliomyelitis.
    - Spastic paralysis.
    - Myasthenia.
    - Parasites.
    - Cardio-vascular.
    - Ocular faults.
    - Faults in hearing.
5. Psychological.
    - Shyness—bashfulness.
    - Modesty.
    - Repression.

Psychological.—*Continued*
  Moodiness—tendencies to melancholia.
  Grouchiness.
  Hypersensitiveness.
  Touchiness.
  Egotism—self-importance—showing off.

6. Environmental.
   a. Early life—Clothes—bands—diapers—shoes—garterwaists.
      Beds—chairs—improper carrying.
      Scooters—pushmobiles—kiddie cars—roller skates—seats.

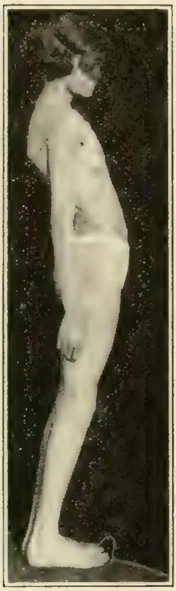

FIGURE 13

Muscular Insufficiency—Fatigue Slump (From records—not posed)

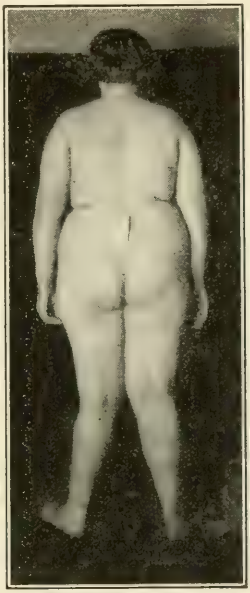

FIGURE 14

Growth Handicap—Glandular Obesity—Age 13½

   b. High School and College—School conditions—seats—lighting—overactivity—overwork—too little rest or sleep for school program—improper games, training, etc.—faulty corsets and shoes—attitudinal strains: music (piano—violin)—concentration strains: sewing—knitting—pottery—brasswork.
   c. Later (Occupational).
      Bench and desk work.
      Stenography—telephone board—machine operation.
      Lighting—ventilation—unhygienic surroundings.

Environmental.—*Continued*

Adjustment of work tables—benches—apparatus—machines, for light without glare.
Too prolonged standing.
Faulty shoeing.
Rest periods, etc.

### Examination to Determine Correct Alignment of the Segments of the Body

To ascertain facts regarding the child's posture, examine him stripped if possible. For detailed examination data see Technique of Examination, Chapter V, page 41. In order to find one-sided condition let a plumb line (see Gravity Lines, Chapter III, page 31) hang through the cleft of the buttocks and note below whether it drops exactly between the heels, and above, between the knees. Place a finger on the large prominent vertebra at the base of the neck and note whether the line passes to one side or through it. Note then if the mid-point of the head is to one side. Note whether one shoulder is higher than the other, if the arms hang evenly, and if the waist angles are symmetrical.

Now examine the child from a side view. Hold a plumb line from a point opposite the lobe of the ear. It should fall across the foot just opposite a point in front of the outer ankle bone (external malleolus) and should pass through the kneecap, the middle of the hip bone and the shoulder. After noting this in the relaxed position have the child straighten by pushing the head up—this can be done more easily if you press down on the head with your free hand.

Test the correct alignment of legs and feet by using gravity line of the leg and foot (see Gravity Lines, Chapter III, page 31). The correct weight line of the leg and foot falls between the first two toes, passes through the middle of the ankle, the middle of the kneecap and the anterior superior spine of the ilium. If the line falls to the floor on the inside, or even through the inner ankle bone, foot and leg deviations exist. (See Foot, Chapter VIII, page 69.)

Note exaggerated spinal curves in cervical, dorsal, lumbar and sacral regions. Note shoulder girdle deviations, prominence of scapulae, and degree of separation of scapulae. Note contour of chest, breasts, and abdomen for flat chest, pendulous breasts, protruding abdomen, etc.

Just because a child looks well nourished and solid, it is no sign that he is straight. His shoulders may be level and square and yet a considerable curvature of the spine may exist. This will be noted by a difference in the arm hang or waist angles. Have the child bend forward, keeping the knees straight. If there is a prominence on either side of the spine it is caused by a twist in the long axis of the spinal column. This means a bad stage of curvature and should have the attention of an orthopaedic surgeon at once. (See Scoliosis, Chapter VII, page 67.)

By placing the fingers on the crest of the hip bones just below the waist angle on either side, and pressing the fat muscle inward, it can be seen if one side is higher than the other. Placing a block or book under the foot on the low side will usually show how much correction on the level is necessary to make the pelvis square with the plumb line and make the waist angles symmetrical. A short leg naturally causes a tilt of the pelvis which in turn causes a lateral curvature of the spine. (See Pelvis, Lateral Tilts and Torsions, Chapter VII, page 63.)

## ANTEROPOSTERIOR DEVIATIONS

### Forward Head

The forward position of the head and neck so commonly assumed as part of the general fatigue slump requires attention because:—

1. It is a segment of the whole that is compensatorily out of place.
2. Of its relation to eye strain.

As to the first consideration, the general correction and improvement of segmental deviations will correct, to a large extent, this tendency, if sufficient emphasis is placed on "spinal push up" (head up, chin in). (See Chapter XVIII, page 207.)

The second factor seems to us not to have been sufficiently appreciated. The assumption and change of habitual body attitudes takes place because of the action of the posturing mechanism in the head and neck, which involves spinal nerve centers, eyes, and inner ear mechanism or labyrinth. The maintenance of posture against heavy odds with segments slumping out of position naturally involves more work for this intricately coördinate mechanism. This results in more neural outgo than exists when alignment and muscle tone are normal. All activities in which fixed attention is necessary, require the head to be held fixed, in order that the eyes may function to best advantage. Consequently the eye position is important. As the optimal line of vision cannot be obtained when the head tilts, twists, or droops, there is required excess activity of the shoulder girdle and neck musculature to maintain this position. Such a leakage of energy is not sufficiently appreciated and we should view fatigue and strain of the whole cervico-dorsal region as actually part of eye strain.[1] It must be remembered that the same muscles that stabilize the head and neck are also associated with the shoulder support and fixation. Hence, finely coördinated hand work which

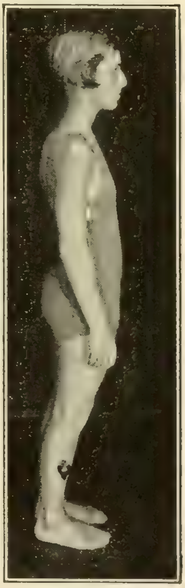

FIGURE 15

Head Deviation —Fatigue Slump (Posed)

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[1] See "Spinal Pathology in Relation to Ocular Manifestations," Lowman, *Journal of Orthopædic Surgery*, March, 1922; "Significance of Spinal Defects in Relation to Ocular Disease," Mills, *California State Journal of Medicine*, January, 1921.

requires exact and continuous shoulder girdle fixation, also necessitates continuous mental attention through the medium of the eye and head balancing mechanism. Such finely coördinated hand work adds further to the burden on neck and shoulder girdle muscles.

### Shoulder Girdle. Round Shoulders

''Round Shoulders'' is a deviation of the shoulder girdle with scapular malposition. The scapulae are separated. The vertebral margins are prominent (winged scapulae) and the scapulae are rotated so that the tip of the shoulder is forward and below normal level.

The degree of separation of the scapulae can be recorded conveniently as follows:

1 degree—three inch separation.
2 degree—five inch separation.
3 degree—more than a five inch separation.

There are two types of round shoulders, relaxed and rigid.

*Relaxed* Round Shoulders are characterized by relaxed, weak scapular adductors, commonly found in ''fatigue posture.'' Frequently associated with malnutrition, rickets and muscular insufficiency. Compensatory to Back Knee, Hollow Back, Dorsal Kyphosis. Condition influenced by: Clothing, heavy breasts, relaxed musculature and occupational positions. (See Fig. 16.)

*Rigid* Round Shoulders are characterized by contractured pectorals and may have structurally short clavicles. (See Fig. 17.)

Congenital Muscle Faults:

Severe cases of round shoulders may also be due to congenital absence of rhomboids, but this is a very rare occurrence.

*Paralytic* Round Shoulders. This is similar to the above condition. Paralysis of the rhomboids with intact serratus magnus will produce severe conditions of round shoulders.

*Treatment:*

Exercises.
  Exercises for Round Shoulders, Chapter XXVII, page 382.
  Exercises for Head and Upper Back—Lower Back—Abdomen. See All Schedules, Chapters XXIII-XXVI.

General.
  Remove cause.
  Rest and diet.
  Instruction in Good Posture.

NOTE: As there are many bursae around the shoulder girdle that become inflamed and sensitive easily, it should be remembered that pain, muscle spasm, neuritis, or limitation of movement indicate that the physician or orthopædist should be consulted regarding their significance.

### Congenital Elevation of Scapula (Sprengel's Deformity)

This is a congenital deviation produced by the failure of the scapula to descend to normal position due to bony or fibrous connection between the superior angle of the scapula and the adjacent vertebral processes.

### Kyphosis—Total Round Back

Kyphosis is an increase in the normal dorsal curve, which in its exaggerated form extends to the lumbar region and is known as total round back. It is compensated by more acute anterior concavities in the cervical region above and at the lumbo-sacral junction below.

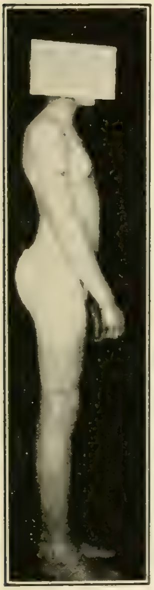

Figure 16
Mild Round Shoulders

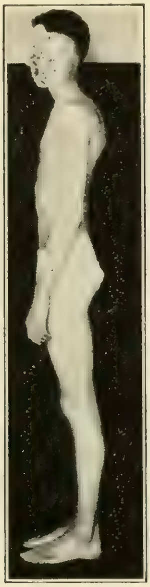

Figure 17
Rigid Round Shoulders

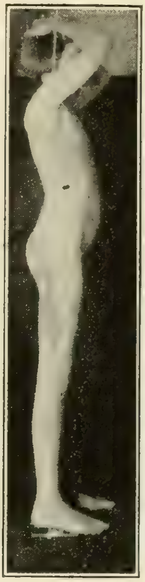

Figure 18
Moderate Kyphosis—Elongated Dorsal Curve

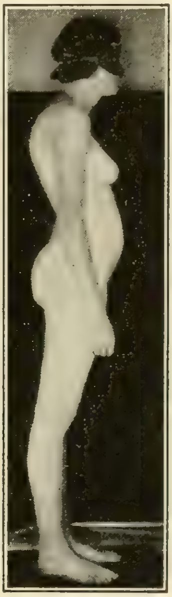

Figure 19
Total Round Back—Structural Kyphosis

a. Mild and Moderately Flexible Type.
   Curve disappears in recumbency and suspension.
   Muscular weakness.
   Shoulder girdle overhanging pelvic girdle.
   Pelvis thrust forward.
   Forward head and cervical lordosis as compensatory to dorsal curve.
   Frequently associated with flat or narrow chest (contracted pectorals).

b. Rigid Round Back Structural.

Does not alter in recumbency and suspension.

Back bending limited to lumbar region.

Increased rib angle, often intercostal neuralgia.

Narrowed anterior posterior diameter of chest, decreased ventilation.

Lowered position of heart.

Lowered position of diaphragm from relaxation of cervical fascia with physiological changes.

Reflex symptoms in viscera and stomach.

Neural disturbances from reflex irritation in all three sympathetic plexuses.

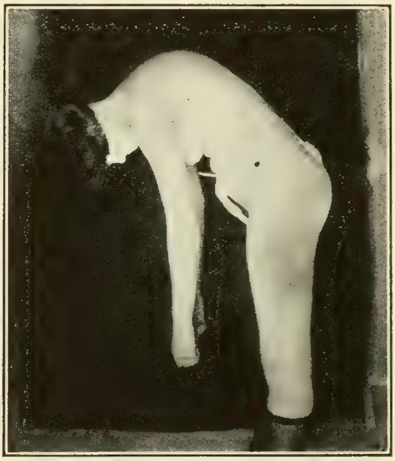

FIGURE 20

Kyphosis Structural
(Increased in Forward Bend)

May accompany:

1. Visceroptosis—relaxed abdominal walls.
2. Visceral changes in pelvis.
3. Irritation in cervicodorsal region of spine or forward head.
4. Irritation in lumbosacral region of spine (neuritis, sciatica).

*Treatment:*

1. Exercises.

   Exercises for Round Back—Chapter XXVII, page 384.

   Exercises for Head and Upper Back—All Schedules, Chapters XXIII-XXVI.

   Exercises for Feet—All Schedules, Chapters XXIII-XXVII.

2. General.
   - a. Mild and moderately flexible type:
     - Exercises in recumbency.
     - Increasing tone through:
       - Diet.
       - Tonic Exercises.
       - Swimming on back.
       - Hydrotherapy and massage.
   - b. Severe flexible—Referred to orthopædic surgeon.
     - Treatment should include:
       - Exercises in recumbency.
     - Increasing tone through:
       - Diet.
       - Tonic Exercises.
       - Swimming on back.
       - Hydrotherapy and massage.
     - Corset or brace.
     - Medical attention for underlying and concomitant conditions.
     - Lithe type—Rest.
     - Stout type—Glandular therapy.
       - Diet.
       - Heavy exercises, lying to start.
   - c. Transitional (Referred):
     - Slightly modified in lying position.
   - d. Mild Rigid Type (Referred):

Unless immediate and continuous improvement is noted case should be referred for orthopædic care. Parents at least should be informed that the condition is worse from a health standpoint than a lateral curvature.

Stretching and relaxing exercises.
Hanging.
Quarter circle.
Traction, etc.
Brace or corset.

Note: Director should not carry the full responsibility. Be suspicious of *Muscular Guarding* in mild kyphosis, especially as to extension movements. *May Be Early T. B.* The kyphosis of Pott's Disease (T. B. Spine) while localized and usually angular in late stages, may not be in the early stages, and whenever a child with flattened lumbar area, or slightly exaggerated dorsal kyphosis, exhibits muscle guarding, decreased inclination to bend, tends to guard against jarring (as in jumping), loses weight, or has very slight temperature, suspicions should be aroused and absolutely no exercise should be allowed. Such a case should be referred, always with a caution that manipulative treatment might be dangerous.

## Kyphosis Angularis—Pott's Disease (Also under Scoliosis)

T. B. of spine—Pain and stiffness.

Destructive pathological process attacking bodies of the vertebræ.

Common in 5th lumbar and 1st sacral together. Not common as purely sacral or sacroiliac.

Slow onset.

Pain not intense for some time.

Loss of weight.

Low temperature.

Guarding, by spasm, against jarring.

Later flattening of the lumbar curve, then kyphosis.

*No Gymnastic Treatment.*

## Kypholordosis—Round Hollow Back

Kypholordosis is an exaggeration of the normal anterior posterior curves of the spine. The term applies chiefly to dorsal convexity and lumbar concavity. The curve is similar to Round Back except it is not so long. The dorsal and lumbar elements are about equal. Shoulder girdle does not overhang the pelvis as much as in complete kyphosis. Pelvis is not thrust so far forward due to compensation. More sacral deviation because of altered lumbosacral relation.

Compensatory:

- Forward head.
- Leg and foot conditions.

*Treatment:*

Exercises:

- Exercise for Round Hollow Back, Chapter XXVII, page 385.
- Exercise for Upper Back, Low Back, Abdominal—All Schedules, Chapters XXIII-XXVI.

General:

- Remove cause.
- Rest and Diet.
- Instructions in Good Posture visualization.

## Lordosis—Hollow Back

Lordosis is an exaggeration of the physiological curve in the lumbar region.

1. Pelvic tilt exaggerated—anterior posterior. (See Pelvic Tilt, page 61.
2. Abdominal muscles stretched.
3. Knees hyperextended (frequently) compensatorily.

Accompanied by:
- Forward head.
- Cervical lordosis.
- Round shoulders or dorsal kyphosis.
- Back knee.
- Pronated ankles.
- Flat feet.

Lordosis may be slight, moderate, or severe. Usually arises from abnormal mobility. Condition is most common in rapidly growing children. Position assumed by many children in an effort to stand erect, especially after the command "chest up," "shoulders back." Condition also occurs frequently in endocrine types. In stout types lordosis is secondary to increased abdominal weight. Wearing high heeled shoes favors production or increase of the condition. One of the commonest of the Rachitic stigmata.

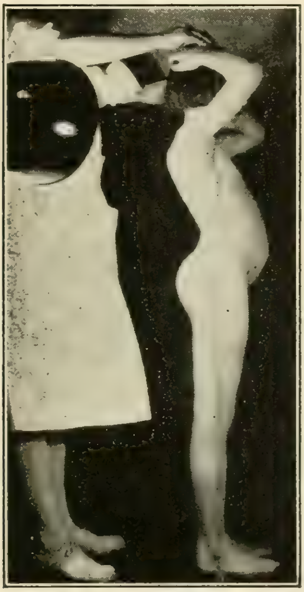

FIGURE 21
Extreme Round Hollow Back
(Note Deviations)

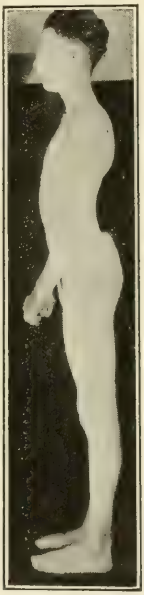

FIGURE 22
Hollow Back — Increased by "Shoulders Back"

*Treatment:*

Exercises:

Exercises for Hollow Back, Chapter XXVII, page 388.

Exercises for Low Back, Abdomen, All Schedules, Chapters XXIII-XXVI.

General.

Care must be used in its correction.

Recumbency to begin with, then sitting.

Flattening exercises.

Careful training of abdominal muscles with tipping of pelvis up in front—down in back.

Leg flexion not indicated on account of activation of psoas.

Segmental control necessitates: Tightening buttock group with outward rotation of the thigh combined with abdominal tensing, low down, then head and chin back with spinal push up. Swimming on back also excellent.

## Flat Back

Flat back is an abnormal decrease in the physiological curve in the dorsal and lumbar regions, with decreased inclination of pelvis.

Accompanied by:

Droop Shoulders.

Forward Head.

Foot faults.

Flat back occurs rather infrequently but unless it is recognized and treated, the condition becomes exaggerated and student develops a weak back.

*Treatment:*

Exercise.

Exercises for Flat Back, Chapter XXVII, page 389.

Exercises for Head and Upper Back—All Schedules, Chapters XXIII-XXVI.

General.

Rest.

Diet.

Instruction in Good Posture.

## Flat Chest

Flat Chest—decreased expansion with contracted pectorals.

Found in lithe individuals of the phthisical type. (See Fig. 23.)

Anterior posterior depth of the thorax decreased, narrow epigastric angle, decreased respiratory function.

Associated with fatigue posture, rickets, malnutrition.

*Treatment:*

**Exercise:**

Exercise for Head, Chest, Upper Back—All Schedules, Chapters XXIII-XXVI.

## Protruding Abdomen

Protruding abdomen—abdominal muscles are relaxed and stretched. Usually exists in Fatigue Posture.

Associated with:

- Hollow Back.
- Increased tilt of pelvis anterior posterior.
- Ptosis.
- Dorsal kyphosis.
- Forward head.

In young children, one of the symptoms of malnutrition, rickets or endocrine dysfunction.

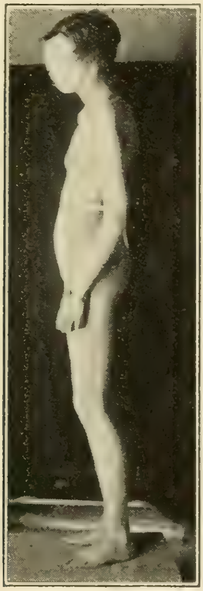

FIGURE 23

Flat Chest—Round Shoulders

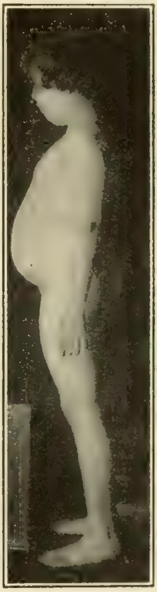

FIGURE 24

Protruding Abdomen—Glandular Obesity—Flat Feet—Age 11

*Treatment:*

Exercise:

- Exercises for Lordosis (Hollow Back), Chapter XXVII.
- Exercises for Abdomen, Low Back—All Schedules, Chapters XXIII-XXVI.

General:

- See Treatment for Lordosis, page 58.

**Pelvis**

*Significant Details.*

Function:

Connects lower limbs with trunk.

1. Stability and support instead of mobility and prehension as in the shoulder girdle.
2. Locomotion under weight bearing.

Characteristics:

1. Composed of the innominates.
2. Part of complete ring, not open behind.
3. More firmly joined to trunk.
4. Hip joint closer to and in more intimate relation to trunk.
5. Bones heavier and coarser than upper girdle.
6. Joints larger and stronger, movements less.
7. Muscles coarser and not so highly specialized.

Structure:

False pelvis above—support of abdominal viscera.
True pelvis below, contains and protects.
Hollow and strong framework.
Comprised of parts essential to support.

Two arches:

Femoro-sacral arch from acetabulum to sides to sacrum in the middle.

Rami of pubes act as tie rods.
Support standing.
Ischio-sacral, gets most of sitting weight.

Chief Postural Abnormalities are:

1. Looseness of sacroiliac joints.
2. Spondylolisthesis (listing of vertebra forward at lumbo-sacral junction).
3. Sacrolumbar impingements and strain. ''Sciatic neuritis'' so-called ''sciatica.''
4. Abnormal sacrovertebral relations (see below, exaggerated Antero-posterior Pelvic Tilt).
5. Lateral tilt and torsions.

Characteristics of Above Abnormalities:

Sacrum keystone of arch to transmit weight bound by ligaments.
Change in position when ligaments relax.
Weakness of transmitting arches.
Degrees of pathological looseness and strain.
Subluxation, dislocation.
Relation of menses and pregnancy.

Measurement of Anteroposterior Tilt:

Anteroposterior tilt of pelvis on the hip joints ranges from fifty to sixty degrees—most authors quote the latter. Quain Gray, Cunningham, Morris, and Piersol say about "60 degrees." Testut says, male 54 degrees—female 58 degrees. A line from the posterior superior spine of the 5th lumbar or top of sacrum to the upper border of symphysis is the line of the external conjugate diameter. Relation of this line to horizontal (a straight line drawn between the hip joints) gives the degree of tilt. Cyriax says: "A simple way of testing this sufficiently accurately for all practical purposes is to place the tip of one finger on the top of the symphysis, and the point of a ruler, held in the sagittal plane, on the tip of the spine of the fifth lumbar vertebra, and then to tilt the ruler until it lies in the prolongation of the line joining the two bony points mentioned. The angle at which it lies can then be read off on a scale placed behind it."[1]

Estimation of Tilt:

"The relation of the anterior superior spine to the upper margin of the symphysis pubis. In normal subjects when viewed laterally these points should be in the same vertical plane. Every half inch deviation (approximately) of anterior superior spine from this plane means a corresponding alteration in the pelvic tilts of about 9°.[1]

"The relation of the anterior and posterior superior spines. In normal males they are in about the same horizontal plane. In females the posterior superior spine is ¾″ higher. If estimated from the posterior superior spine every half inch deviation (from the normal) equals about 5° pelvic tilt change."[1]

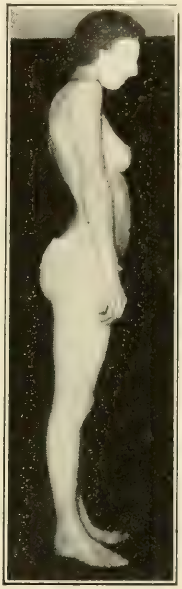

FIGURE 25

Increased Pelvic Tilt

**Anteroposterior Tilt of Pelvis Exaggerated**[1]

Etiology:

a. High heel shoes displace center of gravity forward.

b. Partial spondylolisthesis, subluxation of the 5th with the sacrum.

c. Weakness of anterior abdominal muscles allowing flexors of pelvis to overact.

d. Increased power of pelvic flexors without corresponding increase in anterior abdominals and pelvic extensors.

e. Out toe walking in which arches relax allowing internal rotation which pulls on the pyriformis muscles. This increases the tilt by pulling promontory of sacrum forward.

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[1] See Cyriax: "On the Antero-Posterior Tilt of the Pelvis; Its Variations, and Their Clinical Significance in Children," *British Journal of Children's Diseases*, October-December, 1924.

*Treatment:*

Exercises.

See Exercises for Lordosis, Chapter XXVII.

See All Schedules of Exercises—Abdominal, Low Back—Chapters XXIII-XXVI.

General.

See Treatment for Lordosis, page 58.

# CHAPTER VII

## Lateral Postural Deviations and Growth Divergencies

## LATERAL TILTS AND TORSIONS OF THE HEAD AND NECK

### Tilts—Twists

Lateral deviations and tilts should be attacked by correction of short legs, lateral spinal faults, and improvement of cervical muscle balance. It must be remembered, however, that disturbances of vision and of hearing may be a causative factor. The head may be held off center due to a unilateral eye or ear defect and thus be the cause of a scoliosis.

### Torticollis (Wry Neck)

Torticollis, or wry neck, is a contracted state of cervical muscles resulting in tilting and torsion of the neck. The head is held toward the side affected, face rotated to the opposite side and the chin raised. Sterno-mastoid and other lateral neck muscles on one side are contractured and stretched on the other side. There is practically always a cervical scoliosis as well. Treatment should be early and long continued.

*Treatment:* Treatment indicated only under the direction of an orthopædic surgeon.

## LATERAL TILTS AND TORSIONS OF PELVIS

Simple lateral tilts from unilateral flat foot, a short leg in cases with only a first degree or mild second degree compensatory scoliosis should be corrected by raising the heel. After the scoliosis becomes structural it should be left to the surgeon as to whether and how much shoe correction should be used.

In some cases, viewed from the front, the pelvis may seem tilted in one direction, and from behind in the opposite direction, so that estimation of lateral tilts by leg measurements from anterior superior spine to internal malleolus is not sufficient. Posterior superior spines should be compared, and also the level of the crests.

Sitting on one foot during growing years may malform one of the innominate bones. A looseness in the sacroiliac joints or actual sacral malformation may produce this condition. What to do with it is a matter for expert decision. If expert advice cannot be secured, balance the student to the plumb line as well as possible with symmetrical exercises.

## SCOLIOSIS (LATERAL CURVATURE)

Scoliosis, or lateral curvature, is an abnormal bending of the spine laterally from the normal vertical. In advanced stages there may be a twisting deviation also (''rotary spinal curvature''). The individual curves are named according to convexity, as the left total, total curve convex to the left; or right dorsal left lumbar, curve convex to right in dorsal region, convex left in lumbar region.[1]

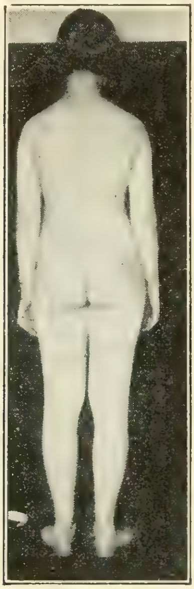

FIGURE 26

Pelvic Tilt—From Left Leg Short—Left Arch Flat

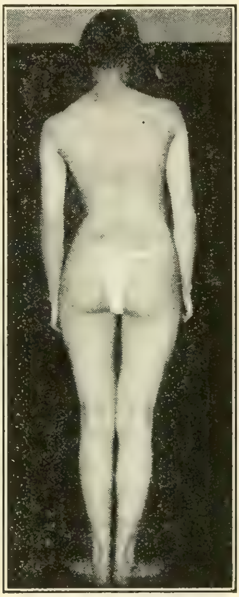

FIGURE 27

Mild Scoliosis—Body List from Muscular Weakness

Congenital
  Vertebral malformations
  Rib malformations
Acquired
  Pathological
  Postural

First degree—Functional or Postural.
Second degree—Transitional.
Third degree—Structural.

POINTS OF ETIOLOGICAL SIGNIFICANCE:

a. Pathological.
    Injuries (secondary).
    Empyema (secondary).

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[1] See Kleinberg: "Scoliosis"; Lovett: "Lateral Curvature of the Spine."

Pathological—*Continued*
  Paralysis
    *Polio.*
    Erbs.
  Rickets.

b. Postural.
  Secondary to short leg, unilateral flat foot or anything causing lateral pelvic tilt.
  Chiefly muscular weakness from exhausting illness.
  Malnutrition.
  Glandular dysfunction and growth faults, exaggerated by habit of giving way to fatigue position.
  Occupational habits.

c. Environmental factors.
  Furniture—Clothes—Desks—Lights.
  Disturbances of sight and hearing.

STAGES OF DEVELOPMENT:

1st degree, Functional or postural.

  Lying test. (Disappears on recumbency and suspension—no skeletal changes.)

2nd degree, Transitional. (Almost disappears on recumbency and suspension—beginning bony changes.)
3rd degree, Structural. (Altered but little on recumbency and suspension—definite bony change of shape and position.)

*First Degree.* Most important time for diagnosis and treatment. Years of time, discomfort and danger saved. Most important from a physical education standpoint, for in this stage exercise is a most satisfactory treatment, coupled with attention to correction of all causative factors. Stress importance of early recognition and correction in grammar grades.

Etiology:

Anatomical faults may influence, but not usual cause:
  Muscular weakness and insufficiency.
  Eye faults.
  Deafness.
  Growth rapid.
  Poor nutrition.
  Short leg.
  Unilateral flat foot.
  Pelvic asymmetry.
  Environmental.
    Clothes—Lighting—Desks—Skating on one skate—Scooters—Sitting on one foot.

Examination:

Shows most commonly:

Total left curve.
Left shoulder high.
Prominence, right in forward bend (Adams' position).
Curve, convex to the left.
No compensatory curve, but may be compensatory head position.
Alteration of arm hang.
Left shoulder forward, right shoulder back.
Right waist more acute.
Decreased mobility to the left.
When above sequence is altered in any respect suspect transitional changes.[1]
Disappear in recumbency and suspension.
Accompanied usually by anteroposterior fatigue slump and foot and leg faults.

*Treatment:*

Exercises:

Exercise Scoliosis, left shoulder high, Chapter XXVII, page 391.
Exercises for Upper Back, Abdomen, Lower Back—All Schedules, Chapters XXIII-XXVI.

General.

First general idea of correct posture.
Begin to correct anteroposterior faults chiefly.
Correct faulty abdomen.
Correct faulty pelvis.
Emphasize spinal "push up."
Emphasize "chin in."
After good segmental control work for lateral corrections.
All causative factors must be met and corrected. Heel raise: In left total curve with left shoulder high, shoe correction on left heel to correct the pelvic tilt, induces recompensation of trunk position, stretching out the short structures in the right waist and allowing slack to be taken up in the weakened muscles of the left side. Sit pad, etc.
Recumbency work, especially in lithe type.
Next sitting.
Next walking, holding correct position—gradually weight lifting and head carrying.
All of this must be accompanied by efforts aimed to increase muscle tone.
Milk in diet.

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[1] See Lovett: "Lateral Curvature of the Spine and Round Shoulders," p. 55.

Vegetable diet.
Orange juice.
Medical attention for anæmia.
Correction of home habits.
  Sleep.
  Excitement.
  Stress in family life.
  Attention to school strain.
  Hours of study.

Prognosis usually good under continued treatment and observation.

*Second Degree Scoliosis (Transitional).* Causes about the same except more evidence of structural factors. Usually seen in an older group from eight to fourteen.

Diagnostic signs:
More rigidity.
Cannot attain complete self-correction.
Show beginning compensatory curve.
Beginning changes of prominence in forward bend (Adams' position).
Curve not completely straightened in lying position.
X-ray.

Prognosis:
More grave.
Worse according to type, general strength, susceptibility to infections, notably T. B. Myasthenic and loose ligament types worse.
Endocrine involvement alters prognosis.
Length of time from onset and amount of coöperation also determine result.
Pathological types poorer prognosis.
  Poliomyelitis.
  Post empyema.
Relaxant treatment contraindicated unless held by apparatus.
Manipulations of any type to be condemned unless under orders with physician assuming responsibility for same.

Physical education teacher should refer all such cases as early as possible to orthopædic surgeon. Stage is beyond exercise treatment under direction of teacher. Such a case may be jointly treated. The treatment outlined would be:

*Treatment:* Preferably continuous traction followed by cast or brace, then exercises. Or, casts repeated till best position, then brace and prescriptive exercises, later corset.

Skeletal changes at puberty shown by X-ray studies indicate no time to be lost, as structural changes are much faster at this time.

Occasionally, it is necessary to consider radical procedure, even in mild cases, as a safeguard against later collapse, when suspicions point to paralytic causation.

If definite osseous deformation which seems to be causative, earlier consideration of spinal fusion.

*Third Degree Scoliosis.* Causes as given for first and second degree. In rapidly developing cases and those of definite advancing bony changes in young children, pubertal or pre-pubertal, definite pathological cause as empyema, poliomyelitis, rickets, or actual congenital bone faults must be anticipated.

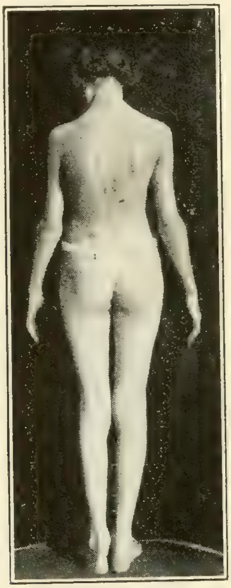


FIGURE 28

Transitional Scoliosis
(Second Degree)

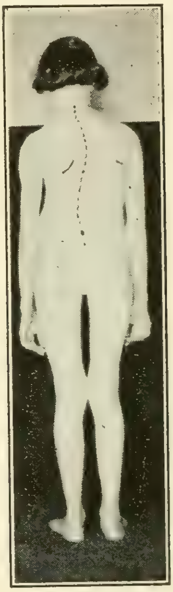


FIGURE 29

Scoliosis—Mild
Structural
(Third Degree)

Examination and diagnosis:

Definite demonstrable deformity.
Decreased mobility.
Asymmetry of form as well as movement.
Deviation not much altered when lying.
Inability of patient to self correct.

*Tuberculosis—Pott's Disease.* (See under Kyphosis, page 56.)

*Kyphoscoliosis.* There may be a combination of kyphosis (total) Round Back or Round Hollow Back) and lateral curvature of spine designated as kyphoscoliosis. Any combination of Rotary Scoliotic deviation accompanied by any degree of kyphosis can be so designated. Treatment: Refer to Orthopædic Surgeon.

# CHAPTER VIII

## Postural Deviations and Growth Divergencies

## FEET AND LEGS

### Development of Bones of Foot

Because of the importance of the foot as the base of support of the body, it should be well understood by the teachers of physical education. It is the foundation and has to stand the stress and strain of weight bearing in activity. This, together with the abuse from faulty shoes, causes, even in a child, frequent deviations from normal. At least seventy per cent of all school children have some modification or deviation from the normal lines of foot and leg development. It is essential to understand the development of the foot from its bony standpoint. The appearance of the calcifying centers of the bones occurs as follows: Before birth, even at six months of fetal life, the calcification of the os calcis, cuboid and astragalus occurs. At birth the X-ray picture shows well developed centers of ossification for these three bones. The astragalus rests upon the upper front end of the joint. At birth the cuboid and os calcis are pretty well formed so that they cast a fairly dense shadow in the radiogram. At one year these bones are well enough advanced to allow weight bearing.

It is instructive to note that there are no arches in the new born babe for the feet are naturally flat at birth. As the muscles begin to act, the normal ''toe in'' position is accentuated, so that the arches buckle up, and at the onset of the weight bearing age, from twelve to eighteen months, there should be a slight beginning arch. By three and a half to four years all the mid-tarsal bones show in the X-ray, and the navicular (scaphoid)—the keystone of the arch—begins its ossification and finishes toward the seventh year. At which time under ordinary circumstances fairly good arches have formed. Under conditions of faulty alignment, such as bow legs or knockknee, the weight thrust may be so far inward, that the ankles tip in. The ligaments and muscles of the soles cannot lift the bones into their normal arched position, and as a result flat and weak feet are produced.

Those children that ''out toe'' with the arch tipping in are likely to become flatfooted. Especially is this true of those with muscular insufficiency from malnutrition, glandular dysfunction or obesity. It must be remembered that there may be a discrepancy between a child's chronological age and his physiological age.

## Bone Development—Index of Physiological Age

Many times a child with weak feet at five or six years may be as heavy and as large as a child of seven or eight years, and yet X-rays of the wrist and foot show that the actual ossification of the small bones are retarded six months to a year or over. This index of physiological age should be ascertained in all young children that seem to be somewhat overweight in proportion to their chronological age.

## Arches of the Foot

It is of value to understand the anatomical structure of the foot as well as its muscle action. It is in reality a compound arch, practically half of a dome, the weight bearing portion of which is the perimeter. We use for convenience sake, the descriptive terms longitudinal arch and transverse arch. These fuse and melt into each other and actually are a part of the same dome. The longitudinal arch extends from the great toe backward to the tip of the heel, and is much higher on the inside than on the outside. If one imagines an elliptical bowl, inverted and resting on its edge and then cut in halves, the cut surface, or one-half dome represents the longitudinal arch. The weight bearing margin, or perimeter, is from the tip of the heel or os calcis outward and forward to its junction with the cuboid, and from the cuboid extending forward through the fourth and fifth metatarsals, thence inward across the heads of the metatarsals to the head of the big toe or the metatarsophalangeal joint. The rear support of the arch is the os calcis or the heel. It slants upward and outward, only articulating at its anterior end with the cuboid, on the outside and the scaphoid or navicular bone on the inside. These in turn articulate with the row of cuneiforms, internal, middle and external, and the latter articulate with the base of the metatarsals which project forward, downward, and normally act as the front abutment of the arch. These bones are all bound together with strong ligaments, which during action of foot, bind it into a compact but springy mass to be acted upon by the muscles. The so-called transverse arch is simply the anterior portion of the bowl in its cross axis, extending from the base of the first metatarsophalangeal joint to that of the fifth. In appearance the normal front arch in the sole of the foot should be slightly concave with usually a mild crease in it. On the dorsal aspect there should be a noticeable fullness in the middle of the foot. This position gives the foot its greatest position of strength and keeps the bones from spreading. It also gives a springy take off as the step is finished. In the absence of this arch, or if the arch is moderately flattened, the front foot is wider and flatter. In some cases, particuarly in women, after wearing hollow soled shoes, there is an actual inversion of the arch, with the convexity in the middle on the plantar aspect, and a perceptible flatness and hollowness on the dorsal aspect. This is exaggerated when the extensor tendons are drawn tight.

### Intrinsic and Extrinsic Muscles of the Foot

There are two sets of muscles controlling the foot, the intrinsic and the extrinsic. The intrinsic muscles are those that arise in the foot and attach to some other portion of the foot. As, for instance, the short accessory flexors and extensors (lumbricales or interossei). In action these muscles hold the bones firmly into position to be acted upon by the extrinsic muscles, *i.e.*, those that attach in the leg and move the foot as a whole on its anteroposterior or lateral axis.

### Movements of the Foot

*Ankle Joint.* The principal movements in the foot are mainly at the ankle joint and the calcaneo astragaloid joint (subastragaloid). There is normally a dorsal flexion at the ankle joint up to seventy or eighty degrees, that is, ten to twenty degrees less than a right angle at its maximum with the forefoot slightly inverted and the knee extended. The plantar flexion is up to one hundred and thirty or thirty-five degrees. The chief lateral movement is in the subastragaloid joint, and although there may be a very slight lateral movement between the astragalus and the tibia, it is not of much consequence.

*Subastragaloid Joint.* The subastragaloid joint is a double saddle joint, and allows movement of the os calcis under the astragalus when the leg is fixed, or allows the movement on the os calcis when the foot is fixed. This movement is mostly lateral with a slight amount on the diagonal.

*Pronated Ankle.* When the foot is moved outward at this joint and the ankle tips in, it is in a position of pronation. The condition of pronated ankles, usually indicates that the weight line of the leg is deviated inward by the tipping of the os calcis allowing it to sag in this joint. (See Fig. 30, page 72.)

There is also some movement in the mediotarsal joint (joint between the astragalus and navicular (scaphoid bones) on the inner side and the os calcis and the cuboid on the outer. This makes a long F-shaped joint in which there is a fair degree of movement. A slight amount of adduction and abduction takes place in this joint. When the inner structures sag and the ligaments relax as in markedly pronated ankles and flat feet, the forefoot deviates into abduction at this joint.

### Normal Foot

The general appearance of the normal foot should be: toes lying flat on the floor, with a neutral position at the metatarsophalangeal joints. A straight line applied to the inner side of the foot should run from the inner edge of the heel to the inner side of the first metatarsal articulation, and should come in contact with the inner side of the great toe at its distal end, or nearly so. Normally the average width of the heel is about one inch less than the width of the ball, except in some very fat feet. It is found, however, that the relaxation of the front foot makes a great deal of difference in this measurement. This is the measurement, however, that the usual normal lasts of the shoes are made upon. The foot should lie directly in the gravity line of the leg which passes down from the anterior spine of the ilium through the middle of the patella, into the foot through the middle of the ankle joint, approximately through the navicular and inner cuneiform bone, to a point between the first and second metatarsals, the latter two of which form the chief front strut of the arch. In this position the outer surface of the foot below the external malleolus extends straight to the ground and does not tip up as it does in a pronated ankle. On the inner aspect there is no bulge at the astragalo-navicular junction. Place a flat surface against the foot from the ground up to and under the internal malleolus. It should touch the whole inner margin of the foot, whereas, in a pronated ankle, when the inner aspect of the foot bulges, this cannot take place. When viewed from behind, the weight line should pass through the middle of the popliteal space and into the center of the heel. It is noticeable in a normal foot that the tendo Achillis passes perfectly straight to the heel and does not alter its

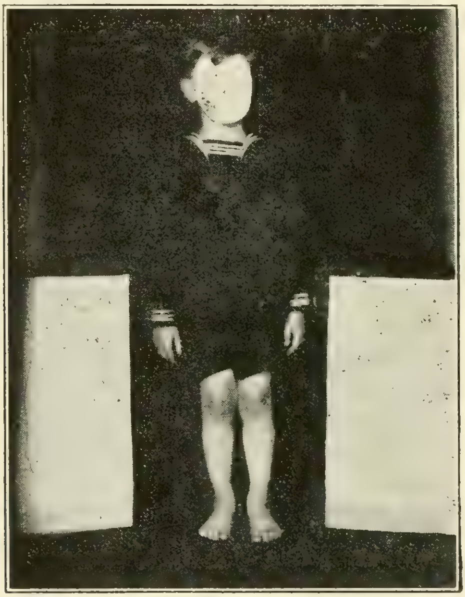


FIGURE 30

Pronation with Associated Knockknee

direction at the insertion, whereas, in the pronated ankle and the flattened foot with the os calcis tipping inward, the direction of the tendon is altered to meet the tilt, and flares outward at its lower end.

## Foot Deviations

The principal alterations of function are due to limitation of motion, congenital defects, deformities resulting from improper shoes, and paralysis or muscular insufficiency. In order to clarify the situation for the teacher or student in relation to the alterations of the foot functions, and also to find out the relation of the musculature of the function of the foot, it is advisable to mention the various types of foot deformities.

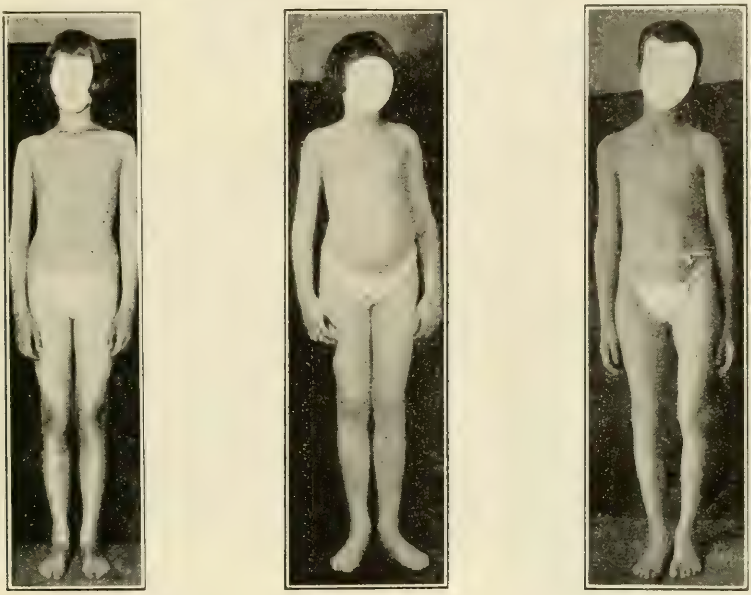


FIGURE 31

First and Second Degree Flat Feet

Hallux valgus—Deviation of the great toe outward.

Hallux rigidus—Thickening of margins of big toe joint blocking its motion.

Hammer Toes—Fixed hyper extension of proximal phalanx with flexion of the distal phalanx.

Claw Foot (contracted foot)—Congenital or paralytic—high arch, prominent metatarsal heads, with hammer toes. (See page 77, Cavus.)

Contractions of the dorsal tendons over the front arch occur in Hammer Toe, Claw Foot, and flat front arches.

Metatarsalgia—Neuritic manifestation due to irritation of the metatarsal nerves from pressure, due to malposition of metatarsal heads incident to breaking of the front arch.

Morton's Toe—Depression of the head of the fourth toe commonly called "Morton's Toe." Practically always due to faulty shoeing or faulty foot action in shoes not appropriate for wearer.

## Talipes Valgus With Pes Planus

The commonest deformity is naturally, talipes valgus with pes planus. This may be of congenital origin, due to paralysis or to paresis (weakening). In this position the ankle is deviated inward, the foot is pronated, the front foot is abducted on the mediotarsal joint and the weight is thrown upon the ligaments so that the plantar structures are stretched and weakened.

In weak and flat feet the anterior tibial muscles, the posterior tibial, the intrinsic plantar muscles, and occasionally the peroneous longus, may be stretched and weakened allowing the foot to sag. It must be remembered that the peroneus longus is a depressor of the big toe and helps hold down the front strut of the long arch. Although the peroneal groups in general may be shortened to adapt themselves to this deviation, the longus itself may actually be moderately stretched. (See Fig. 33, page 76.)

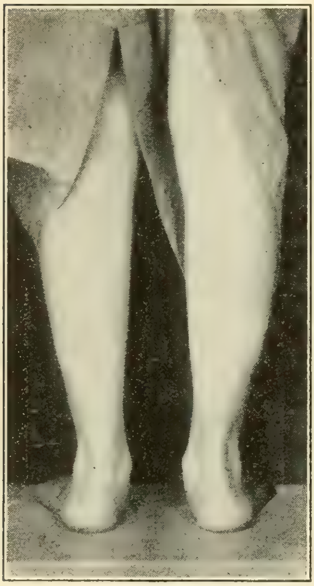


FIGURE 32
Flexible Flat Feet (Third Degree)—(See Figures 32A and 32B)

Flat Foot may be recorded as first, second, or third degree as follows:

1st degree—Scaphoid 1 inch below an imaginary line drawn from the internal malleolus to the prominence of the big toe.

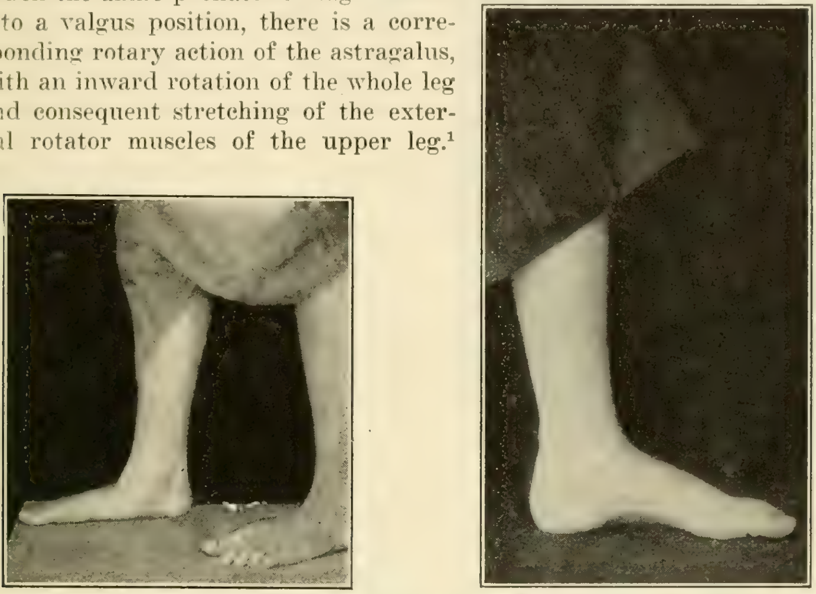
2nd degree—Scaphoid 2 inches below this line.

3rd degree—Scaphoid 3 inches below this line.

*Treatment of Talipes Valgus.* NOTE: In 3rd degree flat feet, after the plantar structures are stretched and weakened, with the arch dropped, the stress falling on the achillis behind and the anterior tibial in front may cause these muscles to hypertrophy and become shortened. They must not be considered necessarily weak muscles. This is very important in the treatment of talipes valgus of the ordinary type, that is, of non-paralytic origin. In this respect it differs from the paralytic valgus which is due to the immediate paralytic weakness in the anterior and posterior tibials. In the ordinary type of non-paralytic flat foot with secondary hypertrophy and hypertonicity of the gastrocnemius and anterior tibial, great care should be taken not to futher exercise and develop these muscles, because they are already hypertonic.

### Pronation and Rotation

It must be appreciated, however, that a valgus position of the ankle can exist in an otherwise normal foot without a coexisting flat foot. When the ankle pronates or sags inward into a valgus position, there is a corresponding rotary action of the astragalus, with an inward rotation of the whole leg and consequent stretching of the external rotator muscles of the upper leg.[1] In this position the patient is apt to walk with the toes out and a gait which has lost its spring, but may or may not have evident symptoms in the feet.



FIGURES 32A AND 32B

Flexible Flat Feet (Third Degree)—Pre-operative and Post-operative
(Same as Figure 32)

### Pigeon Toes

The next most common type of deviation is an exaggerated inversion commonly called "pigeon toe" in very young children. This, in moderate degree, is only a normal position, really a position of strength because the thrust of the weight falls on the outer bones of the foot. This grip on the ground assists in buckling up and forming the arch. However, after the arch is formed, and there is still too much adduction of the forefoot with a mild degree of inversion of the whole foot, the condition is called "talipes varus" and is a border line case of club foot. This type of condition just misses being a real congenital club foot which should be attended to during babyhood, but usually escapes attention. Very frequently one finds a marked "toe in" position with slight inversion even when the arch is high and when there is a knockknee present. Great care should be taken in attempting correction of such a combination or trouble may ensue. In a case of this kind the raising of the outer border of the shoe to correct the "toe in" or varus may exaggerate the knockknee. Such a condition should be referred to an Orthopædic Surgeon for treatment. Occasionally one sees a flat arch and a valgus foot with an exaggerated "in toe" position. It is necessary to treat this foot as a valgus foot and pay no attention to the "in toe" position, which will usually straighten out by itself. When there is any degree of varus of the foot with inversion, or when too much weight is carried on the outer border of the foot, the case should be referred. Ordinary types of exercises are not adequate and in the growing foot this condition will become worse unless attended to properly.

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[1] See "Relation of Thigh and Leg Muscles to Malpostures of the Feet," Lowman, *Boston Medical and Surgical Journal*, January, 1912. See "Relation of Foot and Leg Muscles to the Statics of the Body," Lowman, *Boston Medical and Surgical Journal*, February, 1914.

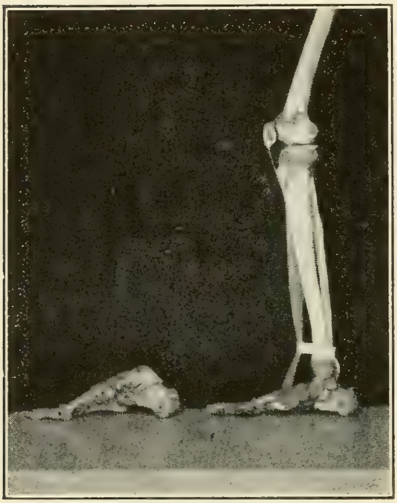

Figure 33

Foot Skeleton—Normal—Abnormal—Faulty Pull Tibialis Anticus—Stretched Annular Ligament

**Talipes Varus**

In cases of talipes varus of more exaggerated degree of the paralytic nature, there is a complete paralysis of the peroneal group (evertors) which allows the adductors and invertors to overact and pull the foot up on the inside. In the milder grades that may not be paralytic there might be simply a disturbance of balance between the two groups of muscles so that the invertors (posterior tibial and anterior tibial) become too strong for the weakened peroneals with resultant deviation.

**Talipes Equinus**

The next common deviation is talipes equinus, commonly called "toe drop." This condition can be a toe drop which involves the whole foot or can be a toe drop in which only the forefoot is the chief factor in the deviation. In the total toe drop where the arch of the foot remains normal we usually have an overactive Achillis with a weakness of the dorsal flexors, notably the anterior tibial and the extensors of the toes. In some instances a strong tendo Achillis exists, with moderately overactive or tight short plantar muscles and paralysis of the anterior tibial, without paralysis of the extensors of the toes. In this case the heads of the metatarsal bones are drawn down causing a downward deviation in the mediotarsal joints. In this type of condition the stretching of the heel cord alone is not sufficient to obtain correction. Mild grades of equinus of a non-paralytic nature are very common in girls and women who wear high heeled shoes; there has been an adaptive shortening of the tendo Achillis, a paresis or overstretching of the anterior tibial and the dorsal flexor group. This is the position that accounts for the increased pressure on the heads of the metatarsals and the common deviations in the forefoot with notably flat front arches, callosities, and large heads of the first and fifth metatarsals and hammer toes.

### Talipes Calcaneus

The opposite of equinus, or calcaneus, is due to paralysis of the gastrocnemius with overaction of the anterior group so that the foot is tipped up in front and the weight is carried on the heel. In most of these instances where the weight is carried on the heel, the pull of the short plantar flexors produces a cavus foot in conjunction with the calcaneus.

### Combined Foot Defects

There may be combinations of these conditions so that there may exist equinus, toe drop, with inversion which is called ''talipes equino varus,'' or a toe drop with eversion called ''talipes equino valgus.'' Also there may exist the reverse condition, calcaneus, with inversion, ''calcaneo varus,'' and the corresponding ''calcaneo valgus.''

### Pes Cavus

The condition of cavus, contracted foot, or hump foot, occurs normally in many instances as a congenital deviation and is not necessarily paralytic. In an instance of this kind we have a very high arch with short plantar structures, usually with the toes cocked up. This is found in the common deviation called claw foot. The cause is not known. It may be due to an irritation in some of the nerve roots, making certain muscles hypertense, disturbing the muscular balance and causing the bones to assume these positions secondarily. The condition may be hereditary. There is also a paralytic type of cavus, in which there has been paralysis of the dorsal structures with intact plantar structures drawing the metatarsal bones down, approximating them to the heel and buckling up the arch. The cavus deformities occur most commonly with the deviations of calcaneus and equino varus.

It is very common to observe children with moderate grades of cavus feet, a narrow rounded heel with a high arch and with toes drawn up. It is important that these cases be detected early because they can be a very great trial in later life and present difficulties in shoeing. There are no exercises of any moment that can control the condition when it has become structural. These cases should be referred to an Orthopædic Surgeon, and Physical Directors should not carry the responsibility for their correction.

In many instances the tendo Achillis may appear very tight but it is not actually contractured, and a mistake is often made by those who make an effort to stretch it. Such stretching is very apt to change the simple cavus condition into a calcaneus which is one of the worst foot deviations to contend with.

One of the most important points to remember in the consideration of deviations of position from normal in the feet is the fact that there is produced a malalignment of the joints in the leg. These joints used ''out of true'' as it were, produce elements of strain on the ligaments. This causes mechanical irritation about the joints which may be a considerable handicap in later life. It is important to stress the necessity of developing muscular strength as well as the use of the foot in a correct position. The foot as the foundation should be kept in the best possible weight bearing alignment.

### Shoes

No discussion relating to the foot is complete without a word regarding shoes. The encasement of the feet in footwear and the activities of present civilization on cement floors, hard roads, sidewalks, hard floors, etc., are undoubtedly the causes of a great variety of foot ills. In fact, such conditions as bunions, enlarged heads of the fifth metatarsals, widened and flattened front arches with callosities and metatarsalgia are definitely attributable to faulty shoeing. The cramping of the toes into the typical hammer toe position, overlapping and overriding toes, ingrown nails, etc., are also due to this cause, aided possibly, by short stockings.

The effect of the shoe on the flexible portions of the foot, as the forefoot, are directly proportional, however, to the question of faulty alignment. In any degree of relaxation of the arch, when the ankle sags into valgus and the weight is carried by the gradually relaxing springy arch structures, the foot will elongate. It will also be thrust forward into the shoe, which, if of conventional type with a narrow toe and a hollow sole, will exaggerate these foot deviations. The deviations are much greater than if the weight is borne normally on the outer aspect of the foot. The box of the shoe cannot spread. It remains stationary, and in order to allow for foot displacement during the weight bearing the front foot (ball of the foot) spreads. The consequence of this is that the leather stretches over the ball and aided by the hollow sole, which is the characteristic of women's shoes, the front arch is forced down and spread out. This spreading of the forefoot resisted by the taper of the shoe, to the forward thrust, in walking and standing, is a common cause of bunions. In addition, the increased height of the heels makes the person carry the weight still more on the ball and further exaggerates this factor. The conventional type of women's shoe with its exaggerated high heel decreases the possibility of balancing the weight on the outer border of the foot, and increases the strain on the ankle. Hence there is a tendency to carry the foot toward valgus. With the shortened heel cord raising the back foot, the pressure on the forefoot is increased due to the downward tilt, and there is a greater tendency for the arch structures to be stretched. Consequently this conventional type of footwear for women, and that of men in which the narrow toes and raised heels exists, produces or increases greatly the foot ills which require orthopædic attention.

The proper shoe is a shoe with a straight last, that is, straight lines from the inner border of the heel along the inner border of the sole, with moderately wide shank and a broad heel of low or medium height. The central portion, or "waist" of the shoe should fit snugly in order to allow the arch reasonable support and to prevent spreading and slipping forward of the foot. Contrary to the usual opinion, a high top shoe is not so essential a factor as the adjustment of the heel and sole as a proper support to the foot. The very short grip that the "upper" of the shoe has on the ankle is not at all sufficient to control the faulty stress of a leg lever which is ten times as long. We advocate flexible shank shoes only in normal symptomless feet, otherwise, we use stiff shanks, and especially for all feet requiring correction.

The type of leather should preferably be the natural leather or "tan" type that allows air to pass through. The habit of wearing patent leather, particularly in warm climates, is not recommended because of the inability of the air to pass through the pores of the leather which have been filled up in the process of making. As a general rule it should be laid down that the ordinary stylish, conventional type of shoe, particularly that worn by girls and women, should be used for as short a time as possible, or in such modification that no great amount of injury will be done. The injurious effect should be offset by wearing the corrective shoes and doing certain corrective foot exercises.

### Gymnasium and Tennis Shoes

The usual type of rubber soled tennis shoe or "sneaker" is decidedly unsatisfactory for general usage at home and for all phases of physical education activity (tennis excepted). It offers no support whatever to the weak footed group, and really tends to injure the average foot. Many manufacturers now are putting out fairly good leather gymnasium shoes which have a better shape and offer some support. It is absurd to wear a tilted heel or correction for a short leg on other footwear and then change to the usual type of gymnasium shoe without correction, and expect to get remedial effects. The leather gymnasium shoe offers an opportunity to continue the correction desired with rubber heels and inner felt, leather, or rubber arch pads. A very useful procedure is to take an old pair of regular orthopædic or broad type low shoes, remove the heel and sole and replace them with a rubber or fiber heel and sole. This gives still more support and corrections can be continued very satisfactorily.

# CHAPTER IX

## Anatomical and Physiological Fundamentals

## SKELETAL, MUSCULAR, AND NERVOUS SYSTEMS

### Laws and Growth Indications

Laws relating to growth, structure, and function that should be recognized in the application of corrective procedures:

1. *Wolff's Law of Bone Growth.* "Bone changes its internal architecture and external shape according to the way in which the weight is borne or the stress is applied."

The importance of having environmental conditions conducive to correct bone development during the years when bones have their period of greatest growth, cannot be overestimated. Wrong seats, incorrect shoes and depression of the shoulders by supporters, all cause the stress to be placed on the skeleton incorrectly and result in a divergence from the normal course of bone growth. All conditions in childhood and adolescence, play, work, sleeping conditions, activity equipment, etc., should be supervised and directed so that the "weight is borne and the stress is applied to secure correct bone development."

All the bones have not received their entire growth, nor have they become completely matured, until the twentieth to twenty-fifth year, corresponding definitely to the activity of the glands of internal secretion, which largely control the maturation of the body. The growth cartilages or epiphyseal lines close, and epiphyses and diaphyses fuse, early or late in relation to sexual development. The tarsal and carpal small bones ossify at different ages from birth to adolescence. At about seven to nine years they have assumed their mature shape in most instances, but still have to grow in size. They continue to grow until about fifteen or seventeen years. The long bones grow in size and length at different rates according to the periods of growth increments. Their growth plates are not completely fused until twenty to twenty-two. The pelvic bones and spine do not complete full ossification very often until as late as twenty-five. Reference to any anatomy, or to such work as that of Baldwin, of Iowa City, in "Physical Growth of Children" is recommended to emphasize the value of continuing corrective efforts throughout school life.

2. *Function in Relation to Structure.* Just as a tree that is exposed to the wind develops a hard, twisted bark on the side that is exposed

to the wind, and bends away from the force of the wind, so does our body framework develop in accordance with the stress applied to it. The shape of various bones is the result of the stress of all the muscles attached to them, plus the force of weight bearing. A muscle becomes larger and more powerful from use and weaker from disuse. In direct proportion, the anchorage of a large powerful muscle has to be rougher, heavier, and larger than that of a small one. *This is a well-known biological law that structure and function are vitally interrelated.*

3. *Vulnerability of Rapidly Growing Tissues.*[1] Tissues are most easily injured during the periods of their most rapid growth.

Importance of the application of this principle to the control of environmental conditions during the period of greatest growth cannot be overestimated. If a child's feet are improperly shod before seven years of age, during the formative period of the bones of the feet, they will be more seriously injured than they would be later, during the same length of time. A faulty diet developing a malnutrition will develop a more serious handicap at one time than another depending on the lack of constituents needed for organic health or bone growth. For instance, feeding a baby on condensed milk, with its deficiency in mineral material, will bring on rickets, whereas, feeding a ten year old child on it would not produce the same disastrous results.[1]

4. *Integration of Organic Action and Skeletal Functions.* It is to be remembered in connection with corrective work that the functional use of various body segments may require finely coördinated effort, whereas, other segments whose functions are for grosser activities like weight bearing or leg action, do not require the same type of control. In this connection then, we see that there should be an appropriate sequence in all activities. There is a definite integration of organic activity to these needs: blood supply, respiration, digestion, and neural control must all be related and taken into consideration. For instance, any work of skill requiring increased attention, with demands for highly coördinated effort, is much more fatiguing and causes greater demand on the brain and nervous mechanism, than muscle mass work, hence the periods must be shorter or harm will result. Whereas, muscle mass work needs increased blood supply and if prolonged, or of too severe a type, will result in harm to the cardio vascular mechanism, *i.e.*, heart lesions may result from such increased stress. It should be remembered also that there is a natural balance between organic capacity and motor or neural output. Consequently the different type bodies must be considered from this standpoint. For instance, the thin, lithe, high speed type have certain differences in skeletal form as well as organic variances, and are also temperamentally and neurally unlike the medium or stout types. (See Body Types and Type Characteristics, Chapter IV, page 38.)

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[1] See "Feebleness of Growth," Jansen.

5. *Height and Weight Indication.* To remove the causes of Poor Posture is one of the fundamental principles underlying all corrective procedures. It is necessary in correcting faults in posture to remove all contributory causes, as underweight, incorrect habits of sleeping, sitting, eating, etc. The height and weight index, making use of the chart for height and weight, in conjunction with physiological type considerations, is recommended. Charts issued under the direction of Department of Physical Education, Philadelphia, Pennsylvania, are based upon tables of Bird T. Baldwin.[1] Charts may be obtained from Director of Physical Education of Philadelphia Public Schools.

Emerson says, "More than seven per cent underweight is the danger line for children."[2] More than seven per cent underweight indicates lessened resistance, susceptibility to disease, etc. Common sense and judgment must be used, however, in considering nutrition factors, especially in handling lithe type children. If they have thin, lithe type parents they should not be necessarily considered unfit unless there are definite stigmata of malnutrition and growth faults.

## Movements, Joints, Muscles

*Muscle Tone.* Muscles are in a constant active state due to muscle tone. Tonic contraction is the normal state of muscle tissue. It is the condition that exists in the muscle when it is receiving impulses from the nervous system so that the slack is taken up—like the fire engine which is kept ready to go at all times by having a little steam in the boiler.

*Physiological Elements Concerned in Muscle Tone.* Receptor-Effector System is called a reflex arc, and constitutes the functional unit of the organism. It has for its purpose the transformation of energy. All parts of the reflex arc are capable of being affected by stimuli.

Receptor—Sense organ, receives impulses.
Afferent conducting path.
Synapse.
Association neurone.
Synapse.
Efferent conducting path.
Myo-neural junction.
Effector-Muscle.

"Good Posture depends upon the tonus of many associated groups of skeletal muscles."[3]

*Flexion,* the movement at a joint, in which the angle of articulation of its component bones is decreased. It is produced by muscles (flexors) so attached as to bring their point of attachment on one member closer to the point of origin on another; *i.e.*, action of biceps in flexing the forearm on the arm at the elbow.

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[1] See "Physical Growth of Children," Bird T. Baldwin.
[2] See: "Nutrition and Health," Emerson.
[3] See "Elementary Manual of Physiology," p. 70, Burton-Opitz.

*Extension.* The action of an opposed group of muscles (the extensors), which moves the joint toward its straight or neutral position, or as in some instances carrying the part farther into a hyper extended position. Example—gluteal muscles—extending thigh on the pelvis or to the limit of backward movement which would be hyperextension.

*Abduction.* The movement of a part away from the mid line of the body brought about by (abductors) or in opposition to the adductors in restoring the part to neutral position from a position of adduction; *i.e.*, deltoid muscle—abducts the arm at shoulder joint.

*Adduction.* Carrying a part toward the body or away from abducted position as, for instance, the pectoralis major is the adductor of the arm at the shoulder in opposition to the deltoid.

*Rotation.* The movement of one part on another moving on its long axis, especially referring to the ball and socket joints, as shoulder and hip. Rotation in these joints is spoken of as inward and outward from the neutral position in the sagittal plane.

*Supination and Pronation.* Supination and Pronation are movements of a rotatory type, more limited in extent, and refer to the palmar or plantar aspects of hands and feet. For instance, pronators move hand or foot palmar or plantarward and the supinators in the opposite direction.

*Circumduction.* Circumduction is a movement occurring at such joints as hip, shoulder, wrist, etc., which allows the part to be carried continuously from one plane to another as in adduction elevation, abduction depression, or adduction flexion, abduction extension.

### Muscle Action

*Concentric Action.* Concentric action takes place when a muscle is contracted and shortened, *i.e.*, action of biceps in arm flexion.

*Eccentric Action.* Eccentric action takes place when the muscle contracts and is lengthened, *i.e.*, action of biceps when arm extends with a weight in the hand (placing weight or book on table).

*Static Action.* Static action takes place when the muscle contracts and remains the same length, *i.e.*, action of back muscles in maintaining erect position of the trunk.

### All or None Theory

All or None Theory was established by research work of physiologists. When muscle fibers are stimulated they contract as much or as little as they can. When the stimulus is increased, the muscle fibers can contract no more. McCurdy says, "A muscular movement in a minimum contraction calls into contraction a few muscular fibers complete rather than the muscle as a whole."[1] With increased stimuli you get additional number of fibers participating.

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[1] McCurdy: "Physiology of Exercises," p. 144.

### Bones and Muscles

Bones are used by muscles as levers to increase their power and as points of attachment.

Three systems of levers are:

1. Lever of first class: Fulcrum is situated between power and weight. Example: Action of triceps in extension of the arm.
2. Lever of second class: Fulcrum is placed at one end. Weight is between it and the power. Example: "The raising of the body upon the toes as during the first stage of stepping forward. The toes represent the fulcrum, while the power is furnished by the gastrocnemius muscle. The weight is applied at the ankle joint."[1]
3. Lever of the third class: Fulcrum lies at one end and the power is between it and the weight. Example: Action of biceps in flexion of the arm.

### Types of Exercises

Four kinds of exercises, active, passive, assistive and resistive, are applicable in corrective physical education.

*Active* exercises are those requiring individual effort of the student.

*Passive* exercises are movements of a part made for the student by assistant or instructor.

NOTE: Passive movements are limited in value and are useful chiefly for their relaxing effort on hypertense, contractured, or overactive muscles. Combined with traction they are used thus and become more applicable to cases handled individually than in classes. In some instances of team work, as in exercises for groups, they may combine or alternate with active movements as in passive stretching upward of arms for increasing chest expansion, etc.

*Assistive* exercises are those in which the student performs some of the work assisted by the instructor. Usually the weight of the part is carried by the assistant and thus the excess load is reduced.

*Resistive* exercises are those performed by the student against resistance, offered by assistant or instructor to make the exercise difficult, to improve tone, control, and nutrition of the muscles, to lower blood pressure, and to control incoördinate movements.

The exercises presented in the text are largely active. These exercises are planned for presentation to groups, either large or small, and must of necessity be limited to active movements. (There are a few exceptions.)

### Modification of Movements

In the application of exercises, it should be remembered that all movements may be modified according to range, duration and force.

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[1] Burton-Opitz, p. 73.

1. *Range*—visualization of degree of motion. Value of movements carried through their complete arc.

2. *Duration*—how long continued or repeated.
   Relation to fatigue.
   Relation to skill.
   Relation to type of muscle work involved as to gross or fine movements.

Time Element:

Exercise should be executed in a definite rhythm based upon type needs, and also upon the purpose for which the exercise is given. Difference in control in various speeds.

3. *Force*—quality of effort.
   Relation of effort to output, also to form and control.

Form:

Form involves all factors in perfecting the pattern of movement. It is necessary to develop accuracy and definiteness, alertness of response, design and grace of movement. Form is the essential vehicle of expression of emotion and mental output.

# CHAPTER X

## JOINTS

### Skeletal Sections

The skeleton is composed of two sections, the axillary section and the appendicular section. Those portions of the axillary section are bones of the skull, vertebræ, hyoid, sternum and ribs; the appendicular section, the extremities, the arms and legs.

### Upper Extremities

The function of the upper extremities is chiefly that of prehension, grip, carrying, moving upper arm, etc. The shoulder joint is characterized by mobility. The range of activity of the hand has been developed for prehensile purposes with a gradually increasing necessity for mobility of arm and shoulder. Because of this, it is presumed by the best anthropologists, that our brain evolution progressed accordingly. The shoulder girdle is the foundation of all hand work, a thing to be remembered in relation to posture studies. There are numerous bones in the hand and arm, loosely put together, which allow for much activity through a large range. The muscles are complex and coördination is very intricate. We have developed a very elaborate sensory-motor integration of the hand and arm muscles with the other senses, as speech and vision. In this connection it should be remembered that those structures that have the highest degree of coördination are the most vulnerable.

### Lower Extremities

The function of the lower extremities is to furnish motion and support. Consequently there is more need for strength and less for mobility. The ligaments are heavier and less elastic. The tissues and structures of the joints are more compact and dense with heavier attachments at the points of bony anchorage. The chief skeletal difference between the upper and lower extremities is that the lower extremities fasten directly to the skeleton, whereas the upper extremities are fastened to the skeleton chiefly by means of muscles. The only bony contact between the shoulder girdle and the trunk is that of the clavicle to sternum. The other attachments are by muscles only. Nature has attached the extremities to trunk by means of girdles, *i.e.*, pelvic girdle and shoulder girdle, as a means of allowing weight bearing, motion and greater range of position.

### Articulation

Joints are composed of opposing bone ends, covered with cartilage, bound together by ligaments (capsular laterals, anterior posterior) and lined by synovial membrane. There are four kinds of articulations. First, the ball and socket type; second, the hinge type; third, the compound or saddle type; and lastly the sliding joint. For the ball and socket type, an example is the hip and shoulder, or the head of the astragalus where it fits into the navicular (scaphoid) bone. The arrangement of the latter allows considerable movement laterally as well as up and down in the mediotarsal region. The chief hinge joints are the elbow and knee. For the sliding joint, the ankle is a good example. It only allows motion in the forward and backward planes. The patella is also another example. An illustration of the compound joint or saddle joint is the metacarpophalangeal articulation of the thumb and carpus, which allows movement in two planes, forward and back and sideward.

The ends of the long bones enlarge to form these articulations and are bound together by ligaments, the chief one of which is the capsular ligament, which encircles the joint and encloses it. Within it, is the lining of the joint, the synovial membrane. This membrane secretes the synovia or fluid for lubricating the joint. There are four main expansions of the capsular ligament—internal and external, and the anterior and posterior ligaments.

The lubrication of the joint is brought about by the following means: The joint cavity is a vacuum and the synovial tissues are sucked up against the articular cartilages just as the wicks in a Corliss engine lubricate its plungers. Think of the synovial linings as wipers of the joint, much as the eyelids are the wipers of the eyeballs. Sometimes little folds of synovial lining are pinched during sudden closure of the joint. This causes irritation and swelling. The enlargement may cause them to be pinched again, thus producing a vicious circle causing a synovitis. This may later give rise to the chronic inflammatory condition known as ''villous arthritis,'' observed so commonly in the knees. It ultimately may cause a great deal of difficulty. Mechanically it is much the same as if one would put a handkerchief in the hinge of the door and then try to close the door. If the handkerchief could react as living tissue does, it would become irritated, and reactive inflammation with congestion and enlargement would ensue. Repetition of this phenomenon would make the condition chronic and thus would be developed a mechanical hindrance to joint function. As years went on this would age that joint from a wear and tear standpoint, lower its resistance to toxic and infectious attacks, and materially reduce its efficiency.

### Functions

1. To allow weight bearing.
2. To allow motion of one part on another.

The degree of motion is determined by the type of bony articulation, tension and elasticity of the ligaments and character of the cartilage. Muscles are the first line in support of the segments of the body. When they are relaxed or weakened, the load is thrown on the ligaments which, if overloaded or weakened by disease or overstretching, give way and induce bad joint alignment, disturbed function and lesions. Ligaments are the second line of defense. They are fibro-elastic, strong, resilient, and return to position after being stretched.

Joints should be considered as a separate entity, not as a part of the arm or leg where their bones come together. Think of the joints themselves as organs of motion. Ordinarily in speaking of organic factors, one thinks of the vital organs. It will give a clearer idea and approach to think of joints as organs, whose function is motion and support, and whose actions are related.

## Development of Joint

*Growth of Epiphyses and Diaphyses.* A joint develops from the ossification of the growth plates at the ends of the bones, called the epiphyses. The parts that make up the joint grow at one rate, while the shaft, or diaphysis, grows at a different rate. One has to grow long, while the other grows wide. Anything that disturbs the epiphyses may disturb contours of the joint. In accordance with Wolff's Law the stress passing through the bones produces a strain on all joint structures. This stress through the joint accounts for its shape and form. In other words, a normal joint would not be developed in such a condition as knockknee. One might probably find a good joint with full range of motion, but it could not be called a completely normal joint. For instance, the knee joint should be nearly at right angles to the line of gravity and adjusted so as to allow any malalignment, such as any little offset of the thigh, to be equalized by change in angulation of the joint. Nature will make changes in structure in accordance with function. If there is abnormal function there will be abnormal structures. Consequently, if the thigh bone inclines inward, as it does in the female more than the male, the pressure of weight bearing naturally passes through the external condyles and tuberosities, thus crowding them together. At the same time the strain on the internal lateral supporting structures will be increased, with resultant ligamentous strain and stretching. Thus there would be produced also a disproportion of growth on the two sides. The epiphyseal plates are the chief growing elements in the bone and are very sensitive. The function and structure of the joint will be naturally influenced by anything affecting the epiphyses.

*Development of Synovial Membrane.* The lining of the joints is developed from a group of cells differentially specialized during the embryonal stage and is called the synovial membrane. Its function has already been mentioned. It is a veil-like structure composed of endothelial cells, supported on a recticular net-like mesh of fibrous or connective tissues in which there are many fat cells. This subsynovial fatty layer forms the fat pads within the joint, plainly seen about the knee and ankle, where they act as a protective buffer. In some joints, the knee for instance, this is particularly valuable. This whole lining layer must be large enough and loose enough to cover the joint when it is opened to the maximum. It is readily noted that as the joint works back and forth, this loosely arranged membrane has to wrinkle up like a bellows when the joint closes. All these little folds and wrinkles are called villi (fingerlike projections), so named because of the microscopic appearance of their cross section. If they do not get out of the way quickly enough when the knee is extended, they will be pinched, a condition which readily occurs in active games and in recovering position from slipping. The result will be injurious and if repeated during games and exercises such as ''deep knee bends'' might account for an arthritis in later life.

## Joint Stability

*Ligaments and Cartilage.* We have discussed the functions of the joints in reference to weight bearing and motion. The degree of motion is determined by the type of articulation. The ball and socket joint allows greatest movement. The hinge joint, as the elbow and knee, allows motion just so far and then is blocked. The knee motion is normally blocked by the action of the posterior ligaments which allow complete flexion but check extension. Sometimes when the posterior muscles are weak, the ligamentous checks are stretched, resulting in ''genu recurvatum.'' This occurs frequently in infantile paralysis and in moderate degrees in cases of general muscle weakness, such as the ordinary postural back knee. The factors determining joint stability are tension and elasticity of ligaments, types of bony articulation and character of cartilage. The cartilage is the buffer or bearing point. It is the covering of the end of the bone, a white and shiny, very smooth, very compact tissue. It allows free motion and its smoothness reduces friction. Another type of cartilage that acts as a buffer or shock absorber is found in the intra-articular cartilage in the spinal column. These act as cushions that keep the bearings tight and snug, yet allow ample motion. The semilunar cartilages in the knee are similar small bodies that act as sliding bearings. Between the flattened top of the tibia and femoral condyles exists a little triangular space that needs filling up. This is accomplished by the semilunars, triangular shaped cartilages. They are held in position by their attachment to the lateral ligaments on their outer aspect. Otherwise they are floating cartilages with a certain amount of play. When the joint is flexed and outwardly rotated forcibly and too quickly, these cartilages may be caught, drawn in, and sometimes crushed or torn, resulting in the so-called fracture of the semilunar cartilage, one of the common injuries in athletics.

If such an occasion arises where a boy or girl on the school ground, who after a fall or strain cannot extend the leg, suspect the displacement of the semilunar, and do not try to force the leg to extend, but gradually loosen it up, or let it alone until it can be seen by a surgeon. Use hot applications and rest until it relaxes into position. If there is a repeated history of such a locking and catching of the knee with a localized area of tenderness or pain, it is a pretty definite evidence of pinching of the semilunar. Under such circumstances operative intervention is required.

### Internal Ligaments

Mobility of the joint is determined by certain factors, one of them ligamentous. We have discussed the external or capsular ligaments. However, in some joints there are also internal ligaments for added stability. The crucial ligaments in the knee and terres in the hip, which fasten the bones together, assist greatly in modifying stability and mobility, and in preventing too great slippage of the articular surfaces. Joint alignment and health are essential to good function, and in great measure permanency of physical efficiency can be determined by efficiency of joint function. There is great possibility of improving or injuring joints by the exercise given them. Be careful in your choice of exercises and discard the ones that have bad effects or tend to neutralize the effect desired. Many times certain types of exercises that may be valuable, may throw strain on the arches, for instance, and you can neutralize such ill effect by proper rest periods or by giving some other kind of exercises, *i.e.*, choose those exercises which would accomplish the same result on the other parts of the body, but would not have such a bad effect on the feet.

### Static Joint Strain

From a static standpoint the words "postural strain" indicate a diagnosis used in orthopædic surgery which is a definite entity. It conveys to our minds the details of a definite condition. Such a condition is evidenced by injured joints, when there is something wrong in their alignment or posture. Day after day the strain of weight bearing on a joint which is out of line will cause trouble. If more tension is put on lateral ligaments to keep the joint from buckling too far inward, its pressure might be so great that it would press or pinch the fringes of the joint lining. This action might be so insidious that the injury would not be in the nature of an acute strain, but rather a chronic succession of tiny injuries. For instance, one might put such strain on the joint by playing a little too hard, or working in a bad position, as in kneeling, or by continued standing as when waiting in line for tickets. If such stress is placed on the ligaments of the inner aspect of the knee or foot, congestion is produced which causes swelling and enlargement of the soft structures about the joints. Following which, more pinching and more swelling are induced and so on, thus instituting the vicious circle.

which indicates that medical advice should be obtained before continuing activity.

In case there are depressed arches and pronated ankles with feet tipped too far inward, not only are all joints of the feet thrown out of line, but there is induced knee strain, laterally as well as rotatory. For example, if there is a twist of one end of the leg, of necessity there must be a twist of the other end, with incident malalignment of the hip joints. When ligamentous tension occurs on one side of the joint, the lining synovia under it is apt to be pinched. When such a condition as this goes on for some years, with pressure of varying degrees constantly repeated, nature must react by thickening the linings. In individuals in whom there is more or less circulatory stasis, the process is more common and occurs more easily, because of the greater congestion. The process is analogous to the formation of callosities on the hands, or corns on the feet. Corns and callosities are pressure signs. If pressure is applied to a place where it is not supposed to exist, the delicate, soft tissue will break down. Nature has to do something to prevent this. Consequently a slight inflammatory reaction takes place in the various layers from skin to deeper structures, resulting in thickening, which is called a corn or callus. This is nature's way of doing the best she can to withstand the pressure. Regardless of how the pressure is exerted, this reaction tends to occur inside the joint as well as on the skin and there must be a physiological change of tissue to meet it. These soft synovial linings cannot withstand pressure. It is their function to

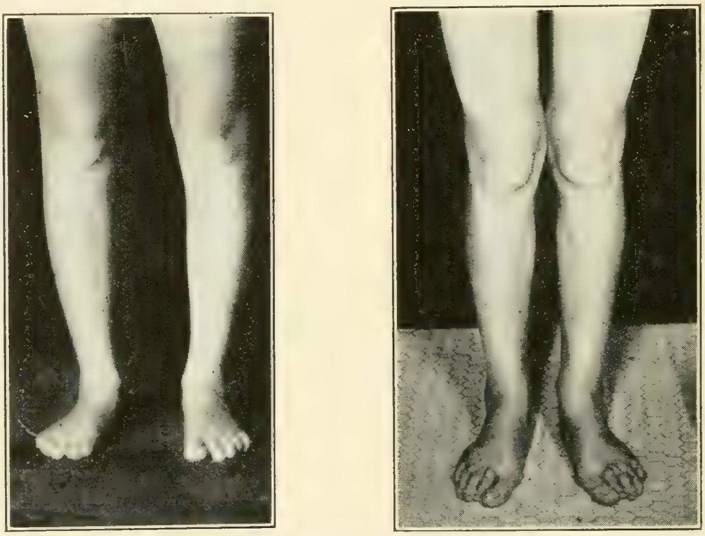

FIGURE 34

Villous Arthritis-Knees—Secondary to Bowleg—Knockknees—Pronation secrete synovial fluid. Consequently when pressure is exerted too frequently nature changes their character. They become more fibrous. The endothelial secreting layer becomes poorer in function and is replaced by inflammatory fibrous or scar tissue, which cannot secrete. This produces a "dry" condition which is evidenced by crepitation and other signs of arthritis. This condition presented to the Orthopædic Surgeon as part of the picture of postural strain, is called villous arthritis, and as stated above is a chronic synovitis.

### Points as to Exercise

Contrary to a fixed idea (see Fig. 34, page 92) among laymen, such joints should not be exercised to "prevent stiffness" and should not be treated by a Physical Director unless under a surgeon's advice.

If you use the "deep knee bend," with overweight pupils especially, when flat foot with pronation or knockknee exist, you definitely predispose such pupils to the development of a villous arthritis in later years. Sensible, well-informed Physical Directors will discontinue or modify the use of all such exercises or minimize the difficult applications of them.

### Neural Consideration

The line of communication to the brain from the various parts of the body is the nervous system. Consequently the local disturbances of the joint function affect the delicate sensory nervous mechanism of the joints involved, and a condition of neural irritability is produced. This increases, causing at first reflex reactions, not necessarily brought into consciousness and later possibly a definite neuritis, which may seriously involve a child's health. The term "Neuritis" doesn't mean anything taken by itself. It is not a diagnostic entity, except in such conditions as have an "alcoholic neuritis," or a toxic neuritis from lead poisoning or something of that sort. As applied by the laity, it is in the same category as the terms "Rheumatism," "Sciatica," etc., indicating a painful condition, usually merely a symptom.

From the orthopædic standpoint, if one starts in with a progressive postural fault the physiological handicap from poor blood supply and overwork becomes too great. In this state of affairs if there is any mechanical injury to the joints, perhaps an accompanying lowered resistance and presence of infectious foci, such as bad teeth or tonsils, there exists a standing invitation to any germs to come to these joints. Thus there is established an "Arthritis" (which the layman calls rheumatism), with varying degrees of severity or chronicity. An infectious arthritis would be more likely to appear in joints in which there has been a traumatism, than in those in which postural strain has not existed. Consequently, then, remember the factors of joint alignment and postural strain in reference to exercise and in consideration of future health and activity.

## Strain—Sprain—Dislocation

Injuries are acute or chronic, direct or indirect. For instance, the ankle is twisted and the ligaments do not snap or tear off, but reach the point of being stretched to the limit, the result is a *strain*. An acute "strain" is simply an overstretching of the ligaments. A "sprain," on the other hand, is a reduced *dislocation*. That is, the bones forming the articulation have moved so far that the ligaments are not only stretched but torn, allowing the bones to dislocate but snap back into position, resulting in injury to the soft structures of the joint. When the bones do not return to the normal position the result is a *dislocation*.

## Chronic Strain

The problem which is of most concern here is a discussion of chronic strain as it has a definite bearing on the corrective problems associated with bodily alignment and function. In a knockknee the internal lateral ligament is under tension and is being constantly stretched and stretched. All of us have put a rubber band on a package and put the package away on a shelf for a time. Later, coming back to it, we found that the rubber was all stretched out and useless. Ligaments also may become stretched for so long that their elastic fibers no longer maintain any tone, and it is difficult to get tone back into them after they have been thus chronically stretched.

This happens in flat foot. After the ligaments have been stretched for a long time they cannot come back. Their elasticity is gone. In a chronically relaxed type of flat foot, with poor tone and bad nutrition, it would be possible to exercise the muscles for a long time, but it would not be possible to restore the ligamentous tone and correct function. When this stage of architectural fault has been reached, correction has to be an anatomical one and operative work is required to accomplish restoration of function.

The ligaments may be considered the second line of defense. Muscles in healthy, normal tone activate the joints through their attachments near the joint. This controls movement one way or the other and assists in stabilizing the joint, practically as the first line of defense. If the muscles become fatigued they relax and stretch, then strain is thrown on the ligaments, which also become stretched. If the stress is unusual or long continued, this ensuing laxity increases the mobility of the joint. What about the strain? It is increased also. Consequently you may consider it as a law, that the strain and stress on a joint are definitely related to the stability of the joint. In mechanical parlance when loosened they must be "taken up" because a tight true bearing uses less power, with less wear. Consequently if the joints are "trued up" more power is transmitted. For illustration, compare two men of given weight and strength. One has some joint faults, say knockknee, with the joint structures under tension, causing increased mobility and relaxation, and the other's ligaments and joints are normal. It will cost the man whose ligaments are relaxed much more power or nerve force to do the same work, than the other whose joint mechanism is normal.[1] When the muscles and ligaments are relaxed, there results a certain amount of increased nerve strain required to keep the muscles and ligaments on the job to assist in stabilizing and supporting the weight or work load, most of which the bones should do. Normally one uses twenty-five per cent of the strength of the forearm power in stabilizing the wrist. If the muscles are flabby and relaxed, think how much more effort will have to be used for a given result.

The strain on the joints of the leg is also in definite proportion to the stability of the foundation. For illustration, if a man were to try to walk about in the average conventional shoe worn by girls and women he would readily appreciate this fact. The more wobbly the foot the greater the strain. An engineer figures the lateral stresses on the walls of a building and recognizes they have a definite relation to its foundation, as well as the load it is to carry. Our bodies are in unstable equilibrium all the time we are standing. The ratio of the strain is definitely increased in accordance with the stability of the base. The muscles are the first line of defense and all factors that would influence bone, joint and muscle structures, would increase strain. Anything that incapacitates muscle or weakens it, increases mobility. When one slumps, stretching and fatigue are induced, which results in more slump. That is the reason why from a protective standpoint teachers must know where to draw the line. If teachers add fatigue to muscles already under too great static strain by exercising them, they are apt to relax, making the fatigue slump worse. There are the cases that need artificial aid in getting back to normal. That is why orthopædic surgeons prescribe braces and supports of various sorts. Some of the factors that stretch muscles and weaken them induce bad faults in alignment, thus making the potential fault worse. In order to differentiate as to which cases should be handled, instructors need to have sufficient knowledge to recognize what their limitations are. One must have a clear idea as to when to use exercise, and when to prescribe rest. We have tried to indicate in this work which cases should claim attention of teacher and which should be referred or handled only under medical guidance.

## Type Considerations

From the anthropological standpoint the joints vary in characteristics in different individuals. The type of individual who is of the heavy, stocky type will not have as much motion in the joints as a long thin type of individual. His joints will be built more for strength and less for speed, more for stability and less for mobility. You couldn't make a contortionist out of a husky, stocky type individual. The long thin type has freer play in ligaments, hence more motion in the joints. Contortionists are of this type. This is one of the characteristic differences between the lithe and stout types. Carry the thought a little bit further and note that the thin type of individual who has increased amount of activity or mobility in joints also has less stability. Consequently, positions of postural strain are more easily induced. He will get out of line faster and even though he may be light, he will develop this strain more quickly. The stout type will have postural strain and get out of line, not so much from instability as from too much weight that is carried out of line.

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[1] See Lowman: "Deflection of Energy," *Interstate Med. Jour.*, Vol. XXII, No. IX—1915.

### Fatigue

When thinking of fatigue don't think of the individual as "being tired," but rather of a fatigue of all structures including joints, and recall that they can all be injured by continuing activity during and after the beginning of fatigue. Remember that in fatigue you have two factors causing relaxation of joint structures.

1. Absorption of fatigue products interferes with muscle nutrition: As the circulatory blood becomes more irritant, the joint structures that are under the strain may also become irritated.
2. Lowering the tone of the muscle in fatigue relaxes it and allows the joints to sag and increases faulty posture or bad alignment. The man with a short leg that gives him no trouble at all ordinarily will get more damage after fatigue. For instance, if one had to walk twenty miles. The first fifteen miles might be negotiated without any trouble, but if after that one were tired, the last five miles would do more damage than the first fifteen would, because one would be more fatigued.

Always remember what relation fatigue strain bears to joints and the converse, that rest relieves joint strain. Many times an individual, from a muscular standpoint, might be able to carry his exercise work, but if he were badly out of line with too much stress on his joint structures, it would be better at such times to give his joints rest. Reduce the stress on joints whenever possible by putting them in the easiest position to work. Swimming makes one of the best forms of exercise for the reason that there is no gravity strain on the joint. In certain types of cases, some forms of work will be definitely detrimental to joint structures, and in many cases people are definitely injured by ill advised activities in school. The wear and tear of foot joints, sacroiliacs and lower spinal joints especially may be easily carried to the point of considerable injury.

# CHAPTER XI

## Applied Principles of Exercises

## BALANCE

### Body Balance

The matter of "balance" as used in connection with exercise, is chiefly a consideration of the relation of muscle groups to their opponents. With this relationship normal, the antagonistic action of the muscle groups is balanced, when the joints involved are in a neutral position.

In a more general sense it refers to "body balance" or the maintenance of the body in its various segments in certain positions in relation to their environment as influenced by the pull of gravity. It is to "body balance" that we will draw your attention more especially. The question of balance in both of these senses, however, is involved in any consideration of bodily mechanics, especially when deviations from normal skeletal alignment are under discussion.

### Necessity for Correct Body Balance

When the various muscle groups involved in maintaining the body segments in proper relation and alignment are out of balance, the weight of the segments shifts, so that the bony columns do not properly carry the full load. The result of this is an unequal load distribution on the ligamentous and muscular guy ropes with more pull on one side than the other. Those on one side become slackened, and in order to maintain equilibrium, nature must take up this slack continuously: thus an adaptive shortening, both active and passive, takes place on the side toward which the part deviates, and on the opposite side a concurrent stretching and elongation.

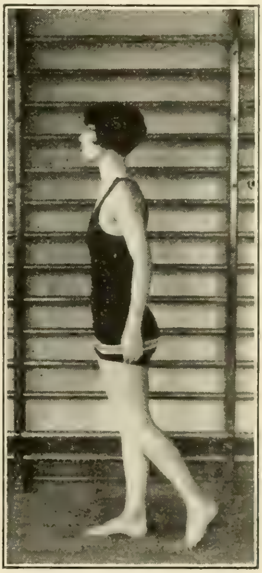

Figure 35

Poise—
"When She Moved There Was a Delightful Sense of Coördination of All Parts into a Graceful Harmony of Motion."
W. Price—"The Heart and the Arrow"

Now, as the flexor groups of muscles, because of their more advantageous locations, are stronger in action than the extensors, and as the pull of gravity is more prone to increase a deviation toward flexion position, it is obvious that the extensor groups have the brunt of the static strain in most instances. *The strain becomes increased in direct proportion to the weakness of these muscles, and the amount of deviation of the part which they must control.* Thereby, is established a circle more and more vicious as the stretching on the one side, and the shortening on the other increases. As this lack of balance continues and increases, it becomes evident that it will require more effort on the part of the central controlling mechanism to execute movements or maintain body balance. Fatigue of the neuro-muscular mechanism becomes established earlier, and endurance is diminished as a result.

### The Effect of Static Faults

Correction of static faults means simply the reëstablishment of muscle balance, and incidental to it, of joint alignment. To accomplish this, shortened and tight muscle groups must be lengthened, and weakened and stretched out opponents must have their slack taken up. Consequently, any position which facilitates these actions should be the position of choice.

According to Sherrington, the tonus of skeletal muscles is influenced and largely controlled by the labyrinth, which is the position sensing mechanism in the brain, and the power house which adjusts the motor mechanism involved in maintaining the balance of the body as a whole, and the inter-relations and muscle balance of its parts. It can be readily appreciated, then, that everything that interferes with the proper and easy use of the muscles, such as postural deviations and nutritional weaknesses, or structural changes in muscles, tends to render the correct functioning of this ''balancing mechanism'' more difficult. For illustration, consider a case of generally relaxed posture with weak muscles and undernutrition. Because of habitual faults in the position of various parts and segments, the sensations passing from them to the sensory side of the brain, register, not a normal relation of parts but a faulty one, and the motor memory patterns developed from these positions are also faulty. Consequently, there is established a neural vicious circle as well as an anatomical one.

### Importance of Good Form

The correction of motor habits through training of the sensory-controlling centers, in a very great number of instances, requires more attention than the simple muscular factors involved. In other words, not ''what'' is done, so much as ''how'' it is done is the important thing. A little work for poise and form (controlled action) is more desirable than much work for simply exercise of muscles whose actions are not consciously controlled. *Neural stability* and *endurance* are the chief ends for which we strive, and the amount and degree of motor accomplishment should be estimated in terms of neural capacity. Of all positions in which exercises are given, we feel that the recumbent and procumbent positions are the safest, and have the widest range of application, when used as fundamental positions—because of the lessened neuro-muscular strain incident to a wide base and improved alignment.

### The Tilted Balance Board

A balance board with tilted treads[1] has been devised by Dr. Lowman. It has certain advantages over the traditional apparatus of the Swedish type. Practically eighty-five to ninety per cent of all students have some degree of faulty foot and leg posture, with the major deviation of the weight thrust inward across the foot with resultant foot strain. In this deviation, the lateral stabilizing muscles become stretched on the inner aspect, shortened on the outer, the knee tends to deviate inward with increased tension on its ligaments, and the whole leg rotates with consequent stretching of the external rotators, a factor in producing low back strain. If then, the majority have foot and leg deviations, it is obvious that more attention should be paid to the foundation, when efforts are being made to improve, by training, the mechanism which controls the balance of the body over its foundation.

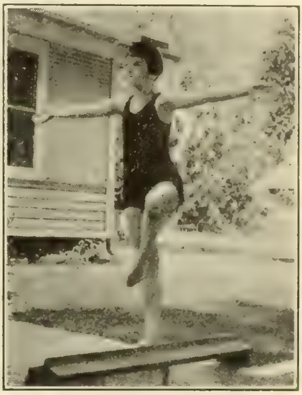

FIGURE 36
Tilted Balance Board for Coördinative Skill

### Types of Exercises

All balance exercises should be of simple type involving large muscles, and rhythmic when possible. The more highly coördinated and the more technically difficult the greater will be the neural fatigue produced.

Formal movements executed from a position in which the base is springy, as on the balance board, during which increased coördinative effort is required to maintain equilibrium, are especially useful in stimulating and developing this posture-controlling apparatus. Posing on the balance board on one leg and making opposite movements of head, hands, and arms, requires greater effort of the muscle groups regulating balance and increases postural strain on the balance mechanism.

### Psychic Factors in Balance Board Work

We must not forget that there is a strong psychic factor also involved, especially evident when the mental hazard is increased. For instance, one may walk the curbing around the garden with ease, with the width only six inches, but to walk a foot-wide plank, twenty feet off the ground, would cause the expenditure of enormously more energy, and the incident fatigue would likewise be greatly increased, even though the distances covered were identical. The technical use of balance exercises, and their proper gradation is a matter which can be developed *cautiously* with excellent results. They are especially applicable to the nervous, high tensioned, over active child, in that they are interesting, and challenge by their difficulties the usually restless, active minds of this type. This group of exercises, however, producing fatigue easily should be either of short duration with repetition, or else followed by a group of recumbency or sitting exercises, in which large muscle masses can be used, and in which there is no balance strain because of the broader, more stable base.

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[1] NOTE: Whenever the term "Tilted Balance Board" is used it refers to the "Lowman Tilted Balance Board."

### Positive-Active and Negative-Passive Values

It should be remembered that there is a double value in balance board movements, a positive-active, and a negative-passive. This is shown, for instance, in the balance board game in which the active hand or foot must be used under control and with accuracy, almost in a dissociated fashion to prevent disturbing the balance control of the rest of the body. The other value is that of maintaining a ''held'' position by the muscle groups stabilizing the inactive parts.

### Value of Tilted Balance Board in Foot and Leg Conditions

On the Swedish board, the feet are carried under the mid line of the body, and consequently into a valgus position which tends to increase the deviation or deformity with the strain and tension doubled whenever the weight is borne on one foot. On the tilted balance board, the foot is in varus, which is the position of correction, and the one which should be desired. The relaxed structures on the inner border of the foot are not under strain and the shortened peroneal muscles are stretched. The ligamentous strain on the knee is decreased, the axis of the knee movement improved, and the outwardly rotated position of the leg reduces the femuro-pelvic strain and irritation.

Because of this corrective position, every exercise performed on this board, regardless of the part of the body actively involved, has a very definite remedial value for foot and leg deviations. This passive static correction is changed to an active correction as the shift is made from one foot to the other. All the slack in weakened, stretched out groups must be taken up, and shortened opponents lengthened, thereby tending toward a return of balanced muscle activity. It is because of this very definite ''fundamental corrective position,'' that the elaboration of the series of games, stunts, posing, etc., has proved of such decided value. The interspace of one inch between the treads forms a line which is useful in orienting the body, and aids in controlling the direction sense through the development of the proprioceptive nerve tracts in the eye, a vital part of the balancing mechanism.[1] When maintaining the erect position, and especially while balancing an object on the head, it becomes impossible for the student to look down to see where he is placing his foot, but he can see this crack several feet ahead of him and must estimate his relation to it, thus exercising both position and direction senses.

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[1] See Lowman: "Effect of Faulty Skeletal Alignment Upon the Eyes," *American Journal of Orthopædic Surgery*, December, 1918.

## Suggestion for Use of the Tilted Balance Board

The board can be used on the floor for the first position, and until the pupils obtain a fair balance in simple movements. Later one or both ends should be raised six inches from the floor. The former position is good for walking up hill with inverted feet for the purpose of stretching a tight tendo Achillis. The latter position is accomplished by placing the supports at appropriate intervals to provide the degree of rigidity and inclination desired. The apparatus made of hard wood, is supple enough to sway up and down when supports are placed farther apart, thus increasing the coördinative strain, and rendering its use more technically difficult. In gradually raising the height from the ground, the mental hazard is correspondingly increased and the exercises are more interesting and attractive. The exercises should progress, from simple to complex, with board on the floor, returning again to simple forms as its height from the floor is increased, then working up gradually to more difficult coördinations.

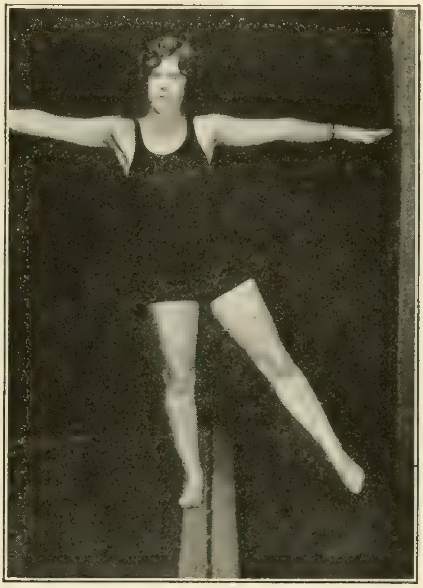

FIGURE 37
Balance Exercise with Secondary Foot Correction

## Remedial Values Obtained by Use of Tilted Balance Board

The chief points of remedial values are the following:

Feet and legs must be maintained in inversion and outward rotation, a "fundamental corrective position." In relaxed posture cases the plantar structures on the inner aspect of the foot, the tibials, especially the posterior, the inner knee ligaments, and the external rotators of the thigh, are all stretched. Consequently, every time one foot is lifted the lateral guy ropes of the other leg must be all pulled taut to secure sufficient stability to stand on one leg. It is obvious then, that all these weakened muscles need to be tightened and their opponents (peronei and inward rotators) which have been too tight, must lengthen to a greater extent on the tilted board than occurs when standing on a flat surface.

The wider tread, upon which the feet are paralleled, does not make as great a neural strain to begin with as the Swedish type of board, and it maintains a better relationship between leg and pelvis. For instance, when the legs are parallel and rotated out, the tightening of the pyriformis muscle (an outward rotator) aids in stabilizing the sacroiliac joints. It is to be noted that this is the only muscle crossing this joint laterally.

This type of balance board can be raised to a height with greater safety than the narrower type, and its range of usefulness is wider, especially in its application to games and group drills.

It excites great interest because all activities carried out on it challenge the skill of the pupil.

### Values of Exercises in Recumbent Positions

*A Safe Position.* Begin all work in recumbency in order to take advantage of what we have termed the ''margin of safety.'' By this is meant that as the heart and respiratory rate is many counts higher in standing than in lying, exercise in the lying position to an amount sufficient to raise the rate to that of the standing position would have no more injurious effect than ordinary walking. This precaution is particularly applicable to the group that is physiologically inadequate from heart conditions. It is recommended during convalescence from infectious fevers and in anæmic and malnutrition cases. This is also the most favorable position for all muscular insufficiencies which are evidenced by poor posture, easily developed fatigue and poor endurance.

The difference between the working rate of the heart and respiratory mechanism in lying and in standing affords us a fairly broad ''margin of safety'' so that all of the weaker type cases mentioned can be given fairly vigorous movements in the lying poition. This ''margin of safety'' creates a nutritional demand, hastens elimination, thus lessening toxæmic tendencies, and improves the functioning of organs. It tends to stabilize the vasomotor balance, and thus lessens congestive tendencies in the membranes of the respiratory tract and viscera.

Since these values can be obtained without raising the pulse rate above the rate for standing and walking, no more damage can result than occurs in walking. Pulse rates should be taken occasionally in all suspected cases, before, during, and after exercise. This, with attention to weight record, should show whether or not a given child should be excused from such work. *Many high tensioned, undernourished children will be more benefited by supervised rest than by exercises.*

*Lessens Fatigue and Toxæmia.* The avoidance of fatigue is desired in all less robust groups because of its incident toxæmia. This is due to the production of waste material, which is acid in reaction, and which has to be neutralized as rapidly as possible from the alkaline supply of the body. The maintenance of a high alkaline reserve is essential to the best functioning of the body, and is doubly important during the growing years because of increased demands during that period. Hence, the lowering of this reserve is a serious matter, and it is difficult for the untrained to know when the critical border line is being approached, and when it may be very detrimental to increase the physiological load by exercise. Ignorance of this fact keeps many an unfortunate child at low ebb and makes it impossible for him to put by any reserve power. Because of this his endurance is limited, his immunity to infections reduced, and the functional capacity of all his organs is lowered. If the onset of fatigue is retarded, the benefits of exercise may be obtained, but its vicious and damaging effects may be guarded against.

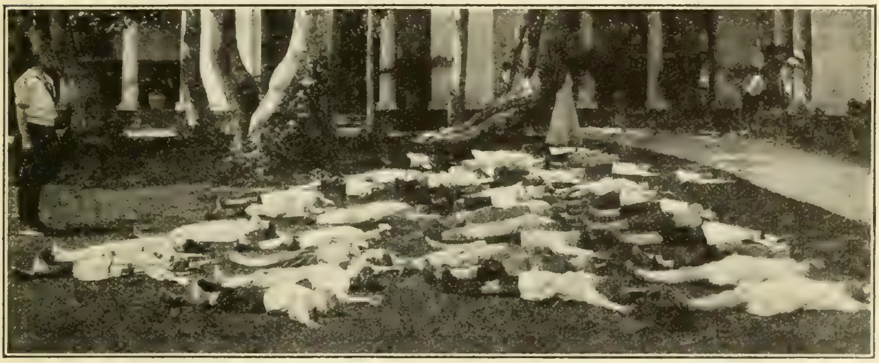

FIGURE 38

Recumbency Exercises. Elementary

*Joint Strain Relieved.* The benefit of exercise in the lying position, from the postural standpoint, should be obvious, but the apparent disregard of it and more predominant use of other forms of activity, shows that mat work and muscle training in recumbent posture has not received the *general* attention of directors at large; and more particularly of those who are responsible for physical activities, but who are not trained directors.

It should be easy to understand that foot and leg exercises *without* a load are more beneficial to begin with, than the same exercises in the standing position in order to prevent the weaker structures from working under the strain incident to weight bearing. All joint strain, actual and neural, is removed and faults in joint alignment are corrected in this position. In consequence more work can be done correctly with less fatigue in it than in any other position.

*Use Open Throat.* Whenever possible the throat should be open (that is avoid closing the epiglottis and retaining air in the thorax under pressure) because there is greater back pressure on the heart and more danger of hernia or rupture when it is closed. For instance, in leg raising, if the legs come up during expiration (student may count aloud or speak the command aloud) there is decreased intra-abdominal pressure and this danger is avoided. The action of the abdominal muscles is then not against a resistant diaphragm, but a steadily relaxing one.

*Best Position for Untrained Teachers to Use.* For supervisors who have under them more or less untrained directors such as grammar grade teachers, and physical directors who have graduated from normal schools, where their training along corrective lines has been more academic than practical, we advise a prolonged and persistent use of this position for the following reasons:

1. Least possible damage can be done in this position, thereby safeguarding both pupil and teacher.
2. Greater amount of vigorous muscle work can be obtained with less strain on cardio-respiratory apparatus, making this position especially useful in heart cases, anæmia, hyperthyroid and other hypertension types, muscular insufficiency, etc.
3. Fatigue for neuro-muscular mechanism is liable to occur early, even in delicate types, because of the lessened balance strain from a broader and more fixed foundation.
4. Most deformities and deviations tend to become corrected or lessened because of decrease of the strain of gravity.
5. Reduction of joint strain, both ligamentous and muscular, allowing muscles controlling the joints to be toned up and strengthened without as much load, and the slack taken up in weakened and overstretched joint structures.
6. All effects of structural faults such as unilateral flat foot, short leg, pelvic asymmetry, and spinal faults are neutralized or greatly lessened.
7. The thorax is broadened and increased ventilation of the lungs is obtained.
8. The position of abdominal organs is improved and visceroptosis corrected.

*Need for Room.* The chief objection made to this position is lack of room and the soiling of the clothing or hair. The first objection cannot be met in the school room unless aisles are broad. An attempt should be made, however, either to give the work out of doors or where there is floor area enough to allow a fair sized group to participate, especial preference being given to the weaker ones who need it the most.

*Head Rests.* The second objection has been met by the head boards. (See Chapter XV, page 130.) They may be used as head rests or upon the head, or as an added piece of equipment for foot work. They may be piled on a table or in a corner when not in use.

## Values of Exercises in a Sitting Position

By the use of the Sitting Position practically as many remedial values are obtained as in recumbency. The position is used in progression from recumbent positions. It is also used for the "margin of safety" when environmental conditions do not permit Backward Lying Exercises.

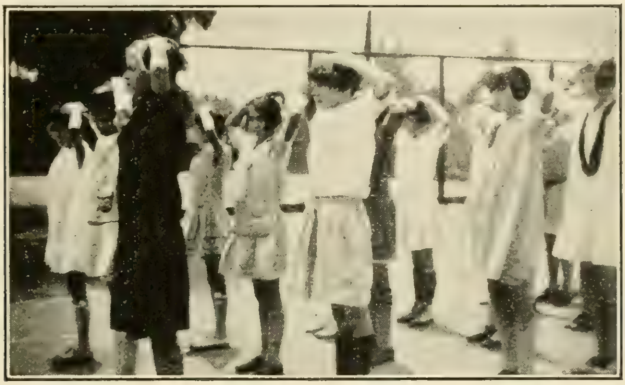

Figure 39
Hands on Head—Standing Position

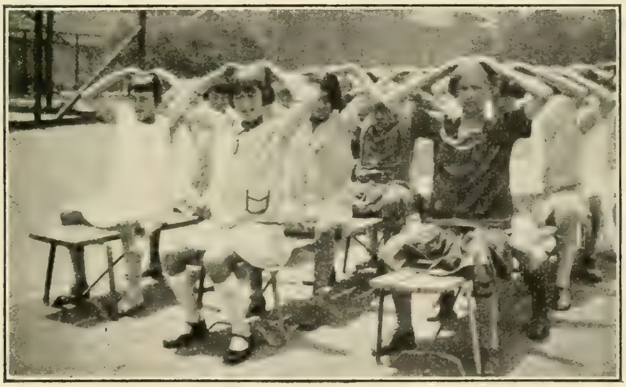

Figure 39A
Hands on Head—Sitting Eliminates Hollow Back

*Sitting Position:*

1. Eliminates hollow back, and puts the foundation of the spine in the best position to exercise the upper trunk muscles, *i.e.*, the rhomboid and cervico-dorsal muscles. The ribs are raised forward for improvement of diaphragmatic function.

2. Removes the strain on feet and legs.
3. Fixes the pelvis.
4. Less strain on the heart (less than standing, a little more than lying).
5. Less strain on sacroiliac joint than standing position.

**Standing Position on Tilted Balance Board**

The use of the tilted balance board is recommended for exercises in the standing position. (See Values, page 100.)

# CHAPTER XII

## BASIC PRINCIPLES OF EXERCISES

### Correct Breathing

In the application of exercises for corrective values it is necessary to note the muscles controlling breathing, and the physiological reactions involved. In all breathing exercises the effort is made to secure natural breathing and the correct use of the diaphragm. Both costal and abdominal (diaphragmatic) breathing should be used.

Burton-Opitz says: "The respiratory movements should be adjusted in such a way that all portions of the lungs are expanded in an equal measure, because it is conceivable that a continued diaphragmatic type of respiration may give rise to a poor ventilation of their apical areas."[1]

*Diaphragmatic and Costal Breathing.* "Under ordinary circumstances the descent of the diaphragm is sufficient to yield an adequate interchange of the gases, but when a more ample ventilation of the lungs is to be effected, the action of this muscle must be augmented by that of other respiratory muscles. The normally diaphragmatic type of respiration is then changed into one possessing a distinct costal character."[2]

*Muscle Action in Respiration.* "To begin with, solely the diaphragm and lower intercostal muscles are at work, while later on the gradually increasing metabolism necessitates the simultaneous activation of the upper intercostals and accessory muscles of respiration."[3]

Cunningham says: "Movement of Expiration is performed by

1. The elasticity of the lungs.
2. The weight of the chest walls.
3. The elevation of the diaphragm.
4. The action of muscles—transversus thoracis and muscles of the abdominal wall."[4]

"Movement of Inspiration results in the enlargement of the thoracic cavity in all its diameters. Its anteroposterior and transverse diameters are increased by the elevation and forward movement of the sternum and by the elevation and eversion of the ribs, while its vertical diameter is increased by the descent of the diaphragm.

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[1] See Burton-Opitz: "Elementary Manual of Physiology," p. 215.

[2] P. 197. [3] P. 198.

[4] See Cunningham: "Anatomy," p. 474.

The muscles of inspiration are divided into two series:

a. Ordinary Muscles.
  - Diaphragm.
  - Intercostals.
  - Scaleni.
  - Serrati posteriores.
  - Levatores costarum.
  - Subcostals.

b. Extraordinary and Accessory Muscles.
  - Quadratus lumborum.
  - Pectorales.
  - Serratus anterior.
  - Sterno-mastoid.
  - Latissimus dorsi.
  - Infra-hyoid muscles.
  - Extensors of the vertebral column."[1]

*Nervous Regulation of Respiration.* "The activity of the different muscles of respiration is controlled by a special group of nerve cells situated in the medulla oblongata. . . . The cells of this center discharge impulses at regular intervals which cause certain groups of muscles to contract, thereby instigating the inspiratory movement. This phase of muscular activity is immediately followed by the largely passive expiratory movement. . . . The only question that remains to be answered as yet, pertains to the nature of the cause producing these differences in the functional capacity of the center. Experimentation has proved that the chief factor is the quality of the blood. . . . Carbon dioxide really does the part of a specific stimulant of the respiratory center."[2]

*When Breathing Exercises Are Used.* Breathing exercises are recommended following abdominal exercises, big muscle activities and at the end of the lesson. These exercises require increased gas exchange.

### Breathing Exercises

"The respiratory mechanism is self-regulatory, and a greater efficiency can only be imparted to it indirectly by augmenting the gas exchange through exercise. Do not put the cart before the horse and endeavor to increase internal respiration by voluntary deep breathing without general muscular exercise."[3]

*Exhalation in Abdominal Exercises to Avoid Abdominal Strain.* It is recommended in all abdominal exercises, as leg raising with knees separated, that the legs should be raised during expiration (have student count aloud, or speak aloud the command or exhale audibly, as blowing the air out through the mouth) to reduce intra-abdominal pressure and avoid danger from hernia. (See Values of Recumbency, Chapter XI, page 102.)

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[1] See Cunningham: "Anatomy," p. 474.

[2] See Burton-Opitz: "Elementary Manual of Physiology," pp. 210-211.

[3] See Burton-Opitz: "Elementary Manual of Physiology," p. 215.

*Breathing Exercises in Recumbent Positions.* Breathing exercises are recommended frequently in Backward Lying Positions with scapular fixation.

*Types of Breathing Exercises Given.* Simple movements are given in connection with breathing exercises:

1. To insure natural breathing with the correct use of the diaphragm.
2. To minimize the faults that usually accompany deep breathing as:
    a. Raising the shoulders.
    b. Exaggerated chest expansion.
    c. Strong contraction of the upper abdominal muscles.
    d. Hollow back. (See Breathing, Chapter XVIII, page 201.)

*Breathing Exercises "On Command."* Breathing exercises are not given in a set rhythm established by the teacher. (See Methods, Chapter XVIII, page 201.)

*Breathing Exercises for Specific Purposes.* Breathing exercises may be used for specific purposes in application of corrective exercises to individuals. For instance, in scoliosis cases, give localized fixation (lateral trunk muscles firm on the convex side) with forced inspiration against the opposite relaxed concave side to force flattened rib cage outward. In "funnel chested" individual (with hollow or depressed sternum) the deviation can be much improved by means of "full inspiration-fixation" of the lateral trunk, back and abdominal muscles with localized muscular thrust outward and forward against the sternum. Similarly in cases of pigeon breast with prominent sternum and flattened or hollowed areas laterally an exercise given in Prone Lying Position with pressure on the prominence and deep inspirations with additional voluntary muscular effort helps to fill out these hollows. In other words the thoracic cage alters to the new lines of stress. This, however, will not be effective unless spinal alignment is continuously maintained.

Note: It is recommended that all students and teachers of physical education study Burton-Opitz "Manual of Elementary Physiology," Part III, Respiration, Chapters XVII-XXI.

## Segmental Control

The consideration of segmental control is an important fundamental principle in all corrective procedures. Try to bring about control of individual segments in all exercises. Segmental control is the raising into consciousness sensations from muscle groups seldom thought of. This physiologically improves the metabolisms of the weak muscles in those affected segments. This conscious activity gradually automatizes the actions of the specific muscle groups which it is desired to develop.

Work for segmental control:

1. Feet and legs.
2. Abdomen and pelvis.
3. Torso.
4. Shoulder girdle.
5. Head.

Practice control in localizing movements for each segment separately without relation to others in appropriate positions in order to begin refining motor patterns piece by piece. Always emphasize the importance of form in the execution of all exercises.

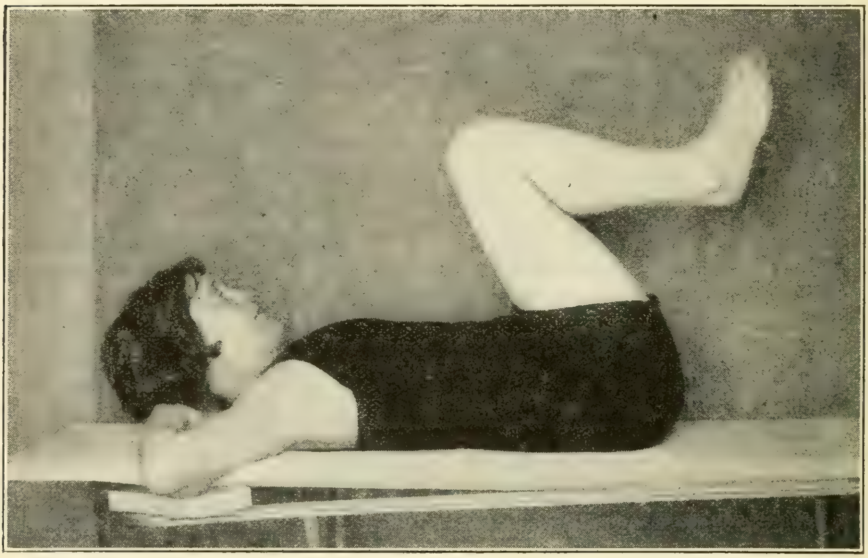

FIGURE 40

Abdominal and Low Back Exercise. Arm Position for Shoulder Girdle Fixation

## Establishment of Points of Fixation for Exercises

The establishment of points of fixation for exercises is an important factor which must not be overlooked. In outlining exercises for certain muscle groups be careful to establish points of fixation so that the action will be localized to the muscle group you desire to develop.

*Examples:*

1. Localization is secured and direction of muscle pull is controlled by fixation of the scapulæ by controlling the rhomboids while abducting the arms. If the scapulæ are not fixed by bringing the rhomboids into action the scapulæ will abduct with the arms and no localized shoulder girdle movement will be obtained.

2. Exercises in sitting position secure fixation of the pelvis.
3. Head raising forward from "Hook Lying," arms "T" or diagonal position. Head raising forward in this position activates the anterior abdominals in flexing the spine, thereby flattening the lower back. Arms "T" or diagonal secures shoulder girdle fixation and checks any tendency toward round shoulders or round back. "Hook Lying Position" secures fixation of the pelvis.

**Action of Antagonistic and Synergistic Muscles**

An essential physiological principle not sufficiently used or appreciated is that involved in the relation and action of antagonistic muscle groups. This is especially applicable wherever a shortened, tense, or overactive muscle or group exists with corresponding weaker opponents which may be stretched or of poor tone.

A well localized, strongly activated movement stimulated in the weak group has an influence on the tightened opponents in relaxing them. In other words, when a motor impulse to act, travels to one group, an accompanying "let go" impulse passes to their opponents, a fact well demonstrated by the famous physiologist Sherrington. As an example of this, note the use we made of abduction to relax and reduce the action of the adductors and prevent their aiding the psoas in thigh flexion and opposing the external abdominals by their pull on the symphysis which tends to keep the pelvis tilted forward. This action of the adductors in assisting the psoas in thigh flexion, is known as synergistic, *i.e.*, one group tending to aid another. Sometimes this combination is desired, but in the exercise for hollow back this action is detrimental and such synergism must be broken up or dissociated.

This regulatory action, back and forth between opponent groups, accounts for the fatiguing effect produced in movements of skill and precision. Strain and fatigue are produced in direct proportion to the fineness of the coördinate effort. When a motor impulse to act, travels to one group, an accompanying "let go" impulse passes to their opponents. As an example, the use of hand tools in fine work may be cited. A surgeon uses the flexors of hand and wrist in cutting, but their opponents must let go or tighten in accordance with the degree of their action as determined by the fineness of the movement. As the length and depth of the cut is determined by *controlling* extensors, this *holding back* of the flexors to the nicest and most minute movement, *produces* far greater fatigue than the flexor action alone.

The poise and control necessary to produce a nice performance, or to obtain correctness of form, technic or grace, are only secured by the development of skill. As reflex arcs become more and more habituated to obtaining this fineness of control, the effort is lessened, and fatigue does not occur so soon. However, the mental hazard and emotional stress increase the tendency to fatigue, and, of course, more greatly tax the mechanism of control. The test of poise is performance under difficult conditions or unsympathetic circumstances.

*Summary:*

Example: Antagonistic Muscle Groups.
  Abduction of legs throws out adductors in thigh flexion
 Synergistic Muscle Groups.
  Adductors of legs assist thigh flexors in thigh flexion

## CHAPTER XIII

### Modification of Activities

#### Classification

In the administration of remedial activities it is necessary first, to examine, analyze and grade the individuals into groups. (See Classification, Part II, Chapter XIV.)

#### Advantages

This grouping makes it possible to take advantage of all play values, the social contact, the invigorating competitive element, the associations of team work, and the sense of accomplishment in doing technically difficult movements. On the other hand the degrees of excitement, the amount of stimulation and the quantity of effort are under more definite control.

#### Heart and Nutrition Cases

Heart cases, or cases of undernourishment do not need to be ruled out of activities. They may have their own exercises and games. In this way the danger of overdoing is entirely eliminated. (See Games, Chapter XXIX, page 439.)

#### Adaptation of Sports

In so far as possible the use and adaptation of the regular school games is advisable. For instance, many stunts with the basket and volley ball are suitable temporary substitutes for the more strenuous regular game. The handling of the balls gives a familiarity which later is of real value when the player reaches the stage when he can participate in the real games. (See Games, Chapter XXIX, page 439.)

#### Adaptation of Exercises

Prescriptions of exercises for specific parts of the body are recommended. Adapt the exercise to meet the needs of the group by judicious application of starting and fundamental positions. (See Schedules of Exercises, Chapter XXVII.) Certain modifications and changes in traditional exercises are recommended.

#### Foot Exercises—Warning and Analysis

The very common errors we see in the average gymnastic program could be met as follows: The tendency toward pronation of the ankles and relaxation of the arches could be decreased by using the straight foot position in exercises instead of the marked toe out position. If between seventy or eighty per cent of all students have some degree of weak feet, actual flat feet, or leg deviations, it is quite apparent that any correction would be of value which would either improve them, or decrease their potentiality for injury.

In foot work it is advisable to eliminate such exercises as "rising on the toes" which develop the calf muscles. In the majority of cases as the arches relax, the os calcis rides up posteriorly and there is an adaptive change of the heel cord group which becomes shortened. If "rising on the toes" is used at all the feet should be in the inverted position, but to continue to give "rising on the toes" tends to increase the power of the muscles already too tight. Rising on the heels, instead of on the toes, with curling of the toes, gives a better development to the plantar structures by contracting and shortening the plantar and intrinsic foot muscles. It does not have the effect that further over development of the Achillis group has on the foot.

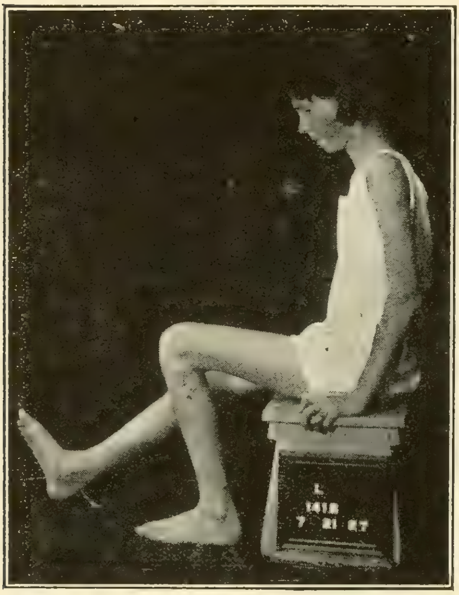

FIGURE 41

Stretched Annular Ligament—Low Scaphoid — Forefoot Supination — Overaction Tibialis Anticus. (See Figure 42)

In cases of very flexible flat foot, the exercises to develop the anterior tibial group are frequently overdone. After the scaphoid bone has been let down below a certain level, it is quite evident that the suspensory muscles of the front foot that are inserted in front of the mediotarsal region, such as the anterior tibial, act on the front foot exactly as the shortened heel cord does posteriorly. This very readily tends to increase the flattening of the foot as the plantar structures elongate. (See Note, Chapter VIII, page 74.) The ordinary foot exercises tend to increase the deviation instead of correcting it. The use of the inverted and adducted position of the foot is the safest one as a rule in the majority of foot exercises.

### External Thigh Rotation

It has been practically accepted that special emphasis in development of outward thigh rotators tends to aid in preventing and correcting valgus ankles and pronation, as pointed out by Lowman:[1] "Considering the leg from hip to ankle to be a lever, varying from two to three feet long, with tightly mortised grip on the astragalus, the bone of necessity responds by rotation." For instance, relaxation of the plantar structures allows the os calcis to tip in and the front foot to abduct. Then the astragalus tips in and rotates, carrying the leg with it, thus stretching the external rotators of the thigh. The replacement of the tone and strength in this group is essential. It should be remembered that the pyriformis is the only muscle that crosses the sacroiliac joints, and the improvement of its tone also protects the joint somewhat. Because cases with weak feet and relaxed posture are naturally apt to have ligamentous laxity in the sacroiliac region there is a double value in this exercise. The great toe should be held to the floor in doing this exercise in the standing position. This will give added tone to the plantar muscles and the peroneus longus.

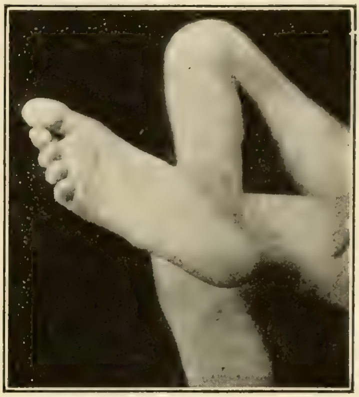

FIGURE 42

Flattening in Dorsi-flexion—Unopposed Action Tibialis Anticus (See Figure 41)

## Warning—Sacroiliac Strain

Those interested specially in athletics and gymnastics for girls should have their attention called specifically to the activities which influence the pelvic joints. The relaxation of the pelvic joints during the menstrual period has been pointed out by Goldthwait, and is very definitely confirmed by orthopædic surgeons in general, who find that an enormously high percentage of women with low backaches have exaggerated symptoms at this time. If then, these sacroiliac and pelvic ligaments are all relaxed during menstruation, it is evident that the postural deviations, such as spinal curvature and tilts of the pelvis in either direction would produce increased strain. In consequence heavy gymnastics and apparatus work, heavy trunk bendings, or asymmetrical leg raisings, etc., should be modified or eliminated during this period.

## Warning as to Use of Straight Leg Raising

A note of caution is necessary in relation to the use of straight leg raising at time of menstruation. As the sacroiliac joints and pelvic ligaments are softened and more relaxed during the period, many girls of relaxed type are very apt to loosen or slip these joints during the alternating straight leg raising. For this reason this exercise should be omitted at this time. Especially is this true in girls who have a tendency to acute ache, strain, or "catch" in the low back, or feel any slipping or snapping which sometimes occurs during straight leg raising. Double leg raising, knees bent, is safer and more valuable, except in cases of hollow back. In these cases it must be remembered that the psoas magnus is a flexor of the pelvis on the thigh, and the increased development of the psoas muscle, which is already shortened in hollow backs, due to the increased anterior tilt, makes it important to realize that leg raising, and raising the trunk from the lying position (sit up), is often not indicated in these cases. Both leg raising and the sit up are commonly given, even by some authorities, as developers of abdominal muscles. We grant that it does this to a certain extent. There are many factors involved, however. These are chiefly, the use of the psoas magnus and iliacus as thigh flexors, and the adductors (which fasten to the region of the symphysis), for pelvic fixation. In consequence of this in using leg raising, we have attempted to reduce to a minimum the overdevelopment of the psoas. (See Note, Restricted Physical Education High School, Chap. XXIII, Schedule I, Exercise 5.) If the back can be completely flattened and the gluteal group developed sufficiently to hold the pelvis in an entirely normal position, the effect on the thigh flexors is not bad. Our effort has been to reduce to a minimum the exercises for muscles that are favored by gravity, and give a maximum amount of work to the opponent groups. The control of the tilt of the pelvis seems to us to be the most important of all factors in posture development.

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[1] See Lowman: "Relations of Thigh and Leg Muscles to Malpostures of the Feet," *Boston Medical and Surgical Journal*, January 18, 1912.[9]

### Abdominal and Low Back Exercises Emphasized

It is essential that more attention be paid to the abdominal muscles. A careful use of abdominal and low back exercises is strongly recommended. It is not sufficiently appreciated by many that the abdominal muscles are really the front guy wires of the spine and trunk. While great care must be given in developing the abdominal group, it is quite essential that these muscles receive much more attention than they do ordinarily. It is necessary to follow all muscle tensing exercises and heavy abdominal movements by complete relaxation and breathing. When overemphasis is centered on the upper abdominal group with drawing in of the diaphragm in the effort to produce a flat abdomen, the tendency is to become muscle bound in the region of the diaphragmatic and upper abdominal muscle attachments.

### Elimination of the Deep Knee Bend

The elimination of the full squat or deep knee bend deserves more careful consideration. The development of arthritis in the knees, which is an inflammatory condition in and about the knee joint, is so common in later life, and the strain on the knee joints during school years gives so many cases of knee joint injuries, that it would seem the part of good judgment to throw out all absolutely unnecessary movements which tend to increase their burden and liability to injury. If one will stop to compute the number of times that the deep knee bend is done during the active gymnasium life of a child in high school and college, it will readily be seen that the total weight of the body is dropped to extreme flexion a great many times. This crowds and pinches the fat pads and linings of these joints and the tendency to injury is entirely disproportionate to the value of this particular exercise. The leg muscles can be strengthened in many other ways without running this risk.

### Modification of the Traditional Lunge Position

The same can be said in relation to various forms of lungeing. Lungeing in the toe out position with stamping of the foot, certainly produces more injury to a weak foot than it can possibly benefit. The lunge can be modified so that the foot position is one of moderate inversion rather than eversion, and its vicious factors are neutralized in this manner.

### Elimination of Trunk Bending Backward

Trunk bending backward is another example of a movement which does a great deal of damage in a very high percentage of cases, particularly those with moderately hollow backs and exaggerated lumbar curves. There is always a large number of pupils with this deviation in any class, and this exercise might do them a great deal of harm. There is no particular reason why normal children should do this exercise, as they will get sufficient development of these groups of muscles in other activities. Therefore, we advise that it be eliminated from the list entirely.

### Warning: Do Not Overdevelop Pectorals

Do not overdevelop the pectorals. Emphasize development of rhomboids and scapular groups. The deviations of round shoulders and round back are so general that all movements which tend to exaggerate these positions should be greatly modified, or entirely ruled out. Greater care must be used in the use of apparatus, and in recreations in which the pectoral muscles receive too great a proportion of development in relation to the posterior shoulder girdle groups. Results of posture studies show the percentage of shoulder girdle deviations to be between seventy and seventy-five per cent in any class. (See Report of Stafford, Chapter I, page 5.) Because of the influence on the chest and deficiency in respiration caused by these shoulder deviations, it becomes apparent that this great majority deserves special consideration in the application of exercises to the upper trunk. In no segment of the body do we find more definitely the action of the gravity pull assisting in deviation than we do in the shoulder girdle. Especially, when there is a round back, or a general fatigue slump with increased dorsal curve and the head and shoulders are carried forward to compensate the weight. The dragging of the shoulders forward stretches the scapular adductors, notably the rhomboids, and allows the scapular depressors and adductors—the pectorals and the teres—to become shortened. In consequence of this it is very important to give an overplus of attention to the scapular adductors and posterior depressors in order to keep the shoulder girdle in proper alignment. There is an important etiological fact, however, commonly overlooked in many shoulder exercises, *i.e.*, in order to develop the rhomboids, the shoulders are drawn back with the arms extended downward, and the increased pull of the adductors of the shoulders is accompanied by adduction of the arm. It is to be remembered that the adductors of the arm may also be the abductors of the scapulæ. In consequence, while an effort is being made to tighten the rhomboids, there is a corresponding tightening of the teres and pectorals due to the fact of drawing the arms in. It is necessary to localize the action of the scapular adductors as much as possible, particularly without tension on the adductors of the arm. Such exercises as adduction of the shoulders while the arms are extended in complete abduction will greatly assist in localizing this effort purely to the rhomboids. Abduction of the arm slacks off the arm adductors, and, in consequence, throws them out of consideration in their synergistic effort.

### Use Open Throat in all Leg Raising

The danger of hernia may be almost wholly eliminated if the throat is allowed to remain open when such exercises as sitting up from the Backward Lying Position or double leg raising are done. The locking of the diaphragm with increased abdominal pressure is prevented by exhaling with the sit-up and inhaling on the reverse movement. Thus the downward pressure with possible production of hernia is ruled out.

### Danger of Rupture in "Pull Up" and "Chinning"

The danger of rupture in excessive use of ''pull up'' and ''chinning'' exercises should not be overlooked. The tendency to close the throat and set the abdominals and diaphragm in order to obtain trunk fixation for better action of biceps and pectorals, produces, of course, marked increase of intra-abdominal tension. A weak abdominal wall may not be able to withstand this pressure. Intrathoracic tension is also increased, making a back pressure on the heart and big vessels. Hence, in cases with any suspicion of cardiovascular weakness or disease it is contra indicated. In cases of thin flat chests where there has been any history of pleuritic attacks, great caution must be exercised because of the influence on the chest wall. Old pleuritic adhesions of a tubercular nature could be torn and cause a flare up of the disease. Passive hanging with arms far apart with progression to hand traveling should be substituted.

### Correct Position of Hands in "Chinning" Important

The "hold" in chinning should be with the palms away from the body "palms out," and the hands far apart. If the palms "face in" and the hands are close together, scapular adductors are stretched and pectorals are overdeveloped.

### Pyramid Building and Heavy Tumbling

The use of pyramid building and heavy tumbling is not indicated for growing and adolescent boys and girls. The weight bearing required in pyramid building is injurious for growing bones and muscles. It also may cause organic bone and joint strains. Pyramid building should be especially watched in those of the stout type because of danger to epiphyses of upper end of femurs, which are very easily injured in this type of child, due to disproportion between physiological and chronological ages as well as discrepancies between height and weight. For suitable activities for age periods see Organization, Chapters XVI-XVII.

# PART II

# CHAPTER XIV

## CLASSIFICATION

### HIGH SCHOOL—JUNIOR HIGH SCHOOL—ELEMENTARY SCHOOL

**I. Large High School and Junior High School**

- A. Regular Physical Education:
  - 1. Assignment:
    - a. Students not eliminated by physical examination.
  - 2. Work Outlined:
    - a. Program of activity unlimited:

      Formal gymnastics, games, athletics, rhythmical work, dramatic pantomime, swimming, apparatus.
- B. Restricted Physical Education:
  - 1. Assignment:
    - a. Students who have slight postural defects:
      - 1. General.
      - 2. Feet.
    - b. Students characterized by nervous instability.
    - c. Students who have poor muscle tone.
    - d. Students slightly below par physiologically (nutrition, heart, etc.)
    - e. Students in transitional stage in passing from corrective to regular physical education.
  - 2. Work Outlined:
    - a. Program of activity limited—no running, no jumping, no heavy apparatus (suspension excepted).
      - 1. Formal posture training:
        - a. Emphasis on exercises in recumbent and sitting positions.
        - b. Emphasis on foot exercises. (See Res. Phys. Ed. Schedules Ch. XXIII.)
      - 2. Rhythmical work (adapted).

3. Light games:
    a. Athletics:
        Baseball.
        Volley ball
        Captain ball.
        Nine court basket ball.
        Hand ball.
        Tennis.
4. Swimming without competition.

FIGURE 43

Dramatized Play, Jefferson H. S.,
Los Angeles, Cal.

C. Corrective Physical Education:
- 1. Assignment.
    - a. Growth handicaps:
        - 1. Physiological (Functional).
            - a. Heart.
            - b. Lungs.
            - c. Endocrines.
            - d. Observation after illness.
        - 2. Anatomical (Functional).[1]
            - a. Lithe and Stout Types:
                - 1. Anteroposterior:
                    - 1. Forward Head.
                    - 2. Round shoulders (shoulder girdle).

---

[1] Students with structural defects are referred to an orthopædic surgeon or to an orthopædic clinic. Exercises to be given for structural defects only under the direction of an orthopædic surgeon. Otherwise students are assigned to Rest.

3. Kyphosis (Round back—total—dorsal and lumbar region).
4. Kypholordosis (Round hollow back).
5. Lordosis (Hollow back—lumbar region).
6. Flat back (Dorsal and lumbar regions).
7. Flat chest.
8. Protruding abdomen.
9. Pelvis:
    a. Exaggeration of anteroposterior tilt.
10. Feet:
    a. Ankle pronation.
    b. Flat feet, 1st, 2nd and 3rd degrees.

2. Lateral defects (usually associated with one or more anteroposterior defects).
    1. Scoliosis (Postural.)
    2. Lateral tilts and torsions of pelvis.
3. General (usually associated with anteroposterior and lateral defects).
    1. Incorrect balance.
    2. Relaxed posture.
    3. Muscular insufficiency due to overfatigue and undernourishment.

b. Medium Type:
    1. Postural conditions as above.

Note: Medium type students unless characterized by exaggerated postural conditions should be able to correct same in regular physical education classes. (Otherwise classify under "Stout Type—Corrective.")

2. Work Outlined:
    a. Program of activity limited; no running, no jumping, no heavy apparatus (suspension excepted).
        1. Formal posture training emphasis on exercises in recumbent and sitting positions; emphasis on foot and suspension exercises. Emphasis on exercises to establish a correct body balance by first developing the individual segments of the body.
        2. Rhythmical work (adapted).
        3. Special corrective games:

Light games:
Volley ball.
Baseball.
Captain ball.

Hand ball.
Tennis.

4. Swimming without competition.

D. Recreation:

NOTE: Students who are assigned to recreation are students who are not capable of participating in any kind of an activity program. This assignment is in most cases (as rupture, infantile paralysis, etc) an assignment for the entire school program—three to four years. Because of the social needs of these students, a light recreational program is recommended rather than rest.

1. Assignment:
   - a. Post operative.
   - b. Menstrual disorders.
   - c. Temporarily under observation (ruptures, etc.).
   - d. Paralyses.
   - e. Endocrine dysfunction (goiterous tendencies).
   - f. Structural defects. (See also Rest.)
2. Work Outlined:
   - a. Program of activity limited. No formal exercises.
     1. Rhythmical work.
     2. Light recreative type of games as croquet, golf putting, quoits, archery.
     3. Crokinole, checkers, dominoes, etc.
     4. Social games in sitting position (passive).

NOTE: Infantile paralysis cases are benefited by social contacts in games that may be played while sitting.

E. Nutrition:

1. Assignment:
   - a. Fifteen per cent or more underweight.
2. Work Outlined:
   - a. Height and weight charts.
   - b. Instruction in food values.
   - c. Instruction in diet figuring.
   - d. School rest periods.
   - e. Home rest periods.
   - f. School lunches.
   - g. Home lunches.

F. Rest:

NOTE: Students who are assigned to Rest are students who are not able (because of physiological or pathological reasons) to participate, temporarily, in an activity program.

- a. Students who will be benefited by rest so that they may improve physical conditions and work towards participating in an activity program later.

  - b. Students who need "Rest" for improvement of physical condition (organic heart cases).
  - c. Students who because of physical condition cannot participate in any sort of activity.
- 1. Assignment:
  - a. Organic heart cases.
  - b. Post-operation or illness.
  - c. Organic disturbances.
  - d. Structural defects (see also Recreation).
  - e. Temperature cases (under observation).
  - f. Endocrines.
- 2. Work Outlined:
  - a. Rest.
  - b. Heart cases may have specially adapted breathing and exercises in recumbent and sitting positions under direction of a physician.
  - c. Special supervision of curriculum and school activities by a physician.

NOTE: Large schools should have a sufficient number of teachers available to make a six group classification possible.

**II. Elementary School**

- A. Regular Physical Education—Restricted Physical Education in Grades 4-8. (For grades 1-3 see Organization, Chapter XVII, page 174.)
  - 1. Assignment:
    - a. Students not eliminated by physical examination.
  - 2. Work Outlined:
    - a. Program of activity adapted:
      Formal gymnastics (see Elementary School Room Schedules, Chapter XXV, page 315), games, athletics, rhythmical work, dramatic pantomime, swimming, apparatus.
- B. Corrective Physical Education Grades 1-8:
  - 1. Assignment:
    - a. Growth handicaps.
      - 1. Physiological (Functional).
        - a. Heart.
        - b. Lungs.
        - c. Endocrine.
        - d. Observation after illness.
      - 2. Anatomical (Functional).[1]
        - a. Lithe and Stout Types:

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[1] Students with structural defects are referred to an orthopædic surgeon or to an orthopædic clinic. Exercises to be given for structural defects only under the direction of an orthopædic surgeon. Otherwise students are assigned to Rest.

1. Anteroposterior:
    1. Forward Head.
    2. Round shoulders (shoulder girdle).
    3. Kyphosis (Round back—total—dorsal and lumbar regions).
    4. Kypholordosis (Round hollow back).
    5. Lordosis (Hollow back—lumbar region).
    6. Flat back (Dorsal and lumbar regions).
    7. Flat chest.
    8. Protruding abdomen.
    9. Pelvis:
        a. Exaggeration of anteroposterior tilt.
    10. Feet:
        a. Ankle pronation.
        b. Flat feet, 1st, 2nd and 3rd degree.
2. Lateral defects (usually associated with one or more anteroposterior defects):
    1. Scoliosis (Postural).
    2. Lateral tilts and torsions of pelvis.
3. General (usually associated with anteroposterior and lateral defects).
    1. Incorrect balance.
    2. Relaxed posture.
    3. Muscular insufficiency due to overfatigue and undernourishment.

b. Medium Type:

1. Postural conditions as above.

> Note: Medium type student unless characterized by exaggerated postural conditions should be able to correct same in regular physical education classes. (Otherwise classify under "Stout Type—Corrective.")

2. Work Outlined:

a. Program of activity limited, no running, no jumping, no heavy apparatus (suspension excepted).

1. Formal posture training. Emphasis on exercises in recumbent and sitting positions. Emphasis on foot and suspension exercises. Emphasis on exercises to establish a correct body balance by first developing the individual segments of the body.
2. Rhythmical Work (adapted).
3. Special corrective games:

Light games:
- Volley ball.
- Baseball.
- Captain ball.
- Hand ball.
- Tennis.

4. Swimming without competition.

C. Rest and Nutrition Grades 1-8:

1. Assignment:
   - a. All students in any group excused from physical education by a physician.
   - b. Fifteen per cent or more underweight.
   - c. Structural defects.
   - d. Post-operative or post illness.
   - e. Paralyses.
   - f. Endocrines.
   - g. Organic Hearts.
2. Work Outlined:
   - a. Rest on cots, benches, floor, lawn, roof, etc.
   - b. Instruction in diet, milk, and rest at home for underweight.
   - c. Recreative types of games under supervision, croquet, checkers, dominoes, and group social games.
   - d. Free play with balls.
   - e. Use of playground equipment, under supervision.

NOTE: The number of teachers available in small schools makes it possible to have only a three group classification. The regular physical education program must be modified to meet the needs of the Restricted groups. The groups ''Corrective'' and ''Rest'' must be made to include ''Nutrition'' and ''Recreation.'' (See Int. Notes, Corrective Physical Education, Elementary, Chapter XXVI.)

# CHAPTER XV

## EQUIPMENT

**I. Large High School and Junior High School**

- A. Regular Physical Education:

  A physical education plant sufficient to meet the needs of all students enrolled in regular physical education classes. (See Organization, Chapter XVI, page 136.)
- B. Restricted Physical Education:
  - 1. Gymnasium floor, or any floor space at least fifty by seventy feet.
    - a. Stall Bars.
    - b. Tilted balance boards. (For description, see Chapter XI, page 100.)
- C. Corrective Physical Education, nutrition, recreation, rest.
  - 1. Room:
    - a. Large airy room with wooden and preferably warm floor.
    - b. As many windows as possible.
    - c. Wall space at least on two sides of room for apparatus and individual work.
  - 2. Apparatus within the room:
    - a. Stationary:
      - 1. Mirror.
      - 2. Swedish Stall Bars.
      - 3. Sliding Rods.
      - 4. Chest Weights.
      - 5. Light Apparatus Racks.
      - 6. Horizontal Bar (Adjustable).
      - 7. Horizontal Ladder.
    - b. Movable:
      - 1. Scales.
      - 2. Benches.
      - 3. Stools.
      - 4. Tilted Balance Boards.
      - 5. Head Boards.
      - 6. Plumb Line.
      - 7. Tape Measure.
      - 8. Wands.
      - 9. Dumb Bells.
      - 10. Indian Clubs.

        11. Jacks.
        12. Marbles.
        13. Tongue depressors—Small pieces of chalk—Pencils.
        14. Mats 4 x 6 feet (small enough to hang up when not in use).

            NOTE: For individual work high plinth or table recommended.

        15. Piano—Victrola—Triangle—Metronome.
    3. Portable Materials (Indoor and Outdoor):
        a. Checkers.
        b. Dominoes.
        c. Crokinole.
        d. Rope Quoits.
        e. Ping Pong.
        f. Small tables and chairs.
        g. Croquet.
        h. Iron Quoits.
        i. Golf Clubs.
        j. Archery.
        k. Tennis racquets.
        l. Tennis and volley ball nets.
        m. Balls:
            1. Volley.
            2. Soccer.
            3. Hand.
            4. Tennis.
    4. Outdoor Equipment:
        a. Tennis courts.
        b. Hand ball courts.
        c. Baseball courts.
        d. Volley ball courts.
        e. Croquet.
        f. Clock golf.
        g. Driving net.
        h. Archery field.
        i. Space for games.
    5. Rest room:

        Cots, mattresses, blankets, and towels for protection of head.

**II. Elementary, Small High School and Junior High School**

A. Regular physical education and restricted physical education:
    1. A physical education plant sufficient to meet the needs of all students enrolled in all grades. (See Chapter XVII, page 159.)[1]
    2. Playground benches, 12, 14 and 16 inches in height. (Sufficiently varied in height so that feet of all pupils touch

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[1] Manual Physical Education, State Board of Education, California, 1918.

the ground, with the right angle bend at the knee.) (See Correct Sitting Position, Chapter III, page 33.)

3. Playground Equipment:
    a. Suspension apparatus.
    b. Horizontal bars.
    c. Ladders.
    d. Traveling rings.
4. School room seats and desks.

B. Corrective, Rest, Nutrition:
1. Room:
    a. Large (as possible), at least large as ordinary class room, with wooden and preferably warm floor.
    b. As many windows as possible.
    c. Wall space at least on two sides for apparatus and individual work.
2. Apparatus in the room:
    a. Stationary:
        1. Mirror.
        2. Swedish Stall Bars.
        3. Horizontal Bars.
        4. Horizontal Ladder.
    b. Movable:
        1. Scales.
        2. Twelve stools.
        3. Four playground benches (2-12″, 2-14″ in height).
        4. Tilted balance boards—6.
        5. Twenty-four head boards.
        6. Plumb lines.
        7. Tape measure.
        8. Wands.
        9. Jacks.
        10. Marbles.
        11. Tongue depressors—small pieces of chalk—pencils.
        12. Three pieces of canvas (6 x 9 feet).
        13. Mats (4 x 6 ft.).

            NOTE: For individual work one high plinth or table recommended.
3. Portable Material (Indoor and Outdoor):
    a. Tennis racquets.
    b. Balls:
        1. Basket ball.
        2. Soccer.
        3. Volley ball.
        4. Tennis.
        5. Balls for jacks.
    c. Checkers, dominoes, etc. (as under High School).

4. Outdoor Equipment:
    a. Playground benches (2-12″, 2-14″).
    b. Tennis courts.
    c. Hand ball court.
    d. Baseball court.
    e. Volley ball court.
    f. Croquet court.
    g. Space for group games.
5. Rest room:
    A rest room adjoining corrective room. Cots (at least six), according to size of school. Blankets, mattresses, and towels for protection of head.

    NOTE: Any materials recommended for High School are recommended for Elementary School if funds and space are available.

## EXPLANATORY NOTES ON EQUIPMENT

Explanatory notes are given on equipment that is used in a specific way for corrective purposes. No explanatory notes are needed on equipment used traditionally and in connection with regular physical education activities.

Suggestions and directions as to use and value:

1. Tilted balance boards (for description and value see Chapter XI, page 99):
    Recommended for:
    1. Balance exercises—Posture correction.
    2. Passive correction of feet.
    3. Games.
2. Wall Space:
    Wall space should be available for class and individual work:
    1. As a means of contact in exercises to flatten the back (Abdominal contraction).
    2. As a means of contact to control erect posture in shoulder blade and upper back exercises.
    3. For purposes of support for exercises for correction of general posture.
    4. As a psychological aid in stimulating better posture. (Assume an erect posture against wall and walk away holding correct position.)
3. Mirror (full length):
    A mirror with a line painted down center—line to be used as a plumb line for checking correct body alignment. (See gravity lines, Chapter III, page 31.)

4. Sliding rods:

   A series of sliding rods on wall to control back flattening with spinal push up. The horizontal rod is placed as in a stadiometer so that it will slide up and down on a vertical rod. This serves as a method of measuring spinal stretching.

   a. Regular standing position can be noted on rod.

   b. The ability to push the head up, chin in, and the distance of the spinal push up can be checked on rod. During the spinal push up check also to see if the spine actually touches surface of vertical rod in its entire length.

5. Chest weights:

   a. Chest weights—used with plinth:

      Against a chest weight combination which contains high pulleys, the end of a high plinth is placed. The pupil lies upon this with feet toward the pulley. The position of the feet depends upon the type of back the pupil has. Sometimes Hook Lying will offset the hollow back. Sometimes the knees have to be upon the chest and occasionally the feet have to be placed on part of the chest weight or wall and used as a brace. The high pulley is over head. With elbows held stiffly so that all motion is in the shoulder joints, the arms are moved sideward diagonally and downward pulling along the line of the pectoral muscles and stretching them. At the same time the pull is in such a direction that the rhomboids are brought into active play. The high plinth is narrow and allows the arms to go past the shoulder level. The hands are allowed to return passively over head pulled by the chest weights. This exercise might be done on the floor in front of an ordinary chest weight, but the arms could not be carried back so far unless a narrow mat were used.

   b. Chest weight used with vertical rod against wall:

      Between the chest weight ropes from the ground up to the top of the chest weight apparatus is a rod. On this is a sliding rod similar to the sliding rod on a stadiometer. Against this a stall bar bench is placed. The pupil sits on the bench and with feet pressing against the floor pushes the sliding rod upward as far as possible. This is to keep the back as flat as possible as the exercise performed produces a hollow back unless guarded against. The pupil lowers the arms sideward downward with elbows straight and palms turned upward. This is given as a general torso broadener.

6. Head boards:

   Small boards for head (6 x 8 x 1½") used as balance element, as an aid in maintaining correct head position. May be used in free floor exercises, games, exercises on tilted balance boards, etc.

7. Plumb line:

   Plumb lines should be used:

   a. In determining correct body alignment for record purposes and during exercises. (See Gravity Line, Chapter III, page 31.)

      NOTE: Line painted on mirror useful in examination and as a check on correct body alignment.

8. Tape measure:

   Tape measure used in examinations. (See Chapter V, pages 41-47.)

9. Jacks and marbles—tongue depressors—small pieces of chalk—pencils—are used for exercises and games for feet.

   1. To develop and strengthen anterior arch by curling and holding with toes.
   2. To develop and strengthen longitudinal arch muscles.

10. Mats:

    Small mats recommended for exercises in recumbent and sitting positions. Small mats are recommended so that they may be hung up for sanitary reasons.

11. Canvas:

    A piece of canvas 6 x 9 feet is recommended for exercises in recumbent and sitting positions. Canvas can be sent to laundry.

12. Portable Materials:

    Games as checkers, crokinole, quoits, etc., recommended for heart cases, students recovering from illness, and all students who cannot participate in active work.

    Games of this nature are recommended:

    a. For recreational and social values.
    b. For discipline.
    c. For quieting effects.
    d. For skill in games.

13. Playground Benches:

    Benches 10-12 feet in length and 12, 14 and 16 inches in height used ordinarily on playground for lunch and for rest purposes, are recommended for use for class work in corrective room or on playground. Six girls or boys may sit astride on each bench, or they may be seated side by side on benches for exercises in a sitting position. Benches may be arranged in rows. All students should be seated on benches so that feet touch the floor or ground with right angle bend at knee. (See Correct Sitting Position, Chapter III, page 33.)

14. Suspension Apparatus:

    1. Stall bars—horizontal bars—horizontal ladder, etc., used for:
       a. Stretching of spinal structures secured by passive hanging
       b. General strengthening.
       c. General flexibility (in rigid and semi-rigid cases only).
       d. Stretching of pectorals.

## CHAPTER XVI

### ORGANIZATION

## ORGANIZATION OF PHYSICAL EDUCATION—HIGH SCHOOL AND JUNIOR HIGH SCHOOL

A most important corrective feature for all schools is that of having sufficient equipment and adequate floor and field space to take care of the numbers of students enrolled.

### I. Equipment Requirement for Regular Physical Education Program, to Secure Corrective Values for all Students, High School and Junior High School

The regular physical education plant should include, according to the number of students enrolled:

a. Dressing rooms, lockers and showers.
b. Gymnasia.
c. Fields for sports.
d. Swimming pool.
e. Equipment—balls, bats, hockey sticks, etc.
f. Apparatus—light and heavy.

The suggested corrective equipment and program is not in any way to take the place of the regular physical education equipment and program. All students, both regular and corrective, should be cared for according to their needs.

In a large High School, in which on the average of two hundred and fifty students are enrolled in each period (either boys or girls), if there are available for girls (duplicate for boys) only one gymnasium floor and one field large enough for hockey or soccer, the type of work that is possible under these conditions is not constructive for all students. Granted that the school is given four or five capable teachers to handle the work, the following organization of classes would result:

| | |
|---|---|
| Two teachers—Rhythmical or floor work in gymnasium | 100 Students |
| One teacher—Field work | 50 Students |
| One teacher—Corrective in corrective gymnasium | 30 Students |
| One teacher—No space available for constructive work | 70 Students |

It is assumed now that with four or five women (duplicate for men) employed for physical education in a large High School, at least one and possibly part of the time of another teacher should be devoted to corrective physical education. The recommendation for equipment in this case for constructive work is not only the corrective room with facilities as outlined, but sufficient floor and field space to give all groups, activities according to their needs. For a group of two hundred and fifty students, either boys or girls, enrolled per period, a physical education program should provide:

| | |
|---|---|
| Floor space A | 100 Girls |
| Field space B—Space sufficient for one hockey field.<br>2 Baseball Fields | 60 Girls |
| Field space C—Basket Ball Field | 30 Girls |
| Field space D—Volley Ball Field | 20 Girls |
| Corrective and Rest Room E | 40 Girls |

Equipment and space should be duplicated for boys' activities for the same number of boys.

Using the classification of girls suggested in Chapter XIV, page 123, with corrective equipment available and with five teachers, and a student enrollment of two hundred and fifty girls per period, a constructive program from a corrective point of view for all girls, giving each girl activities suited to her needs, requires the following division of space and equipment for the group for one period:

| | |
|---|---|
| Given Floor and Field Space as above | A-B-C-D-E |
| Given Teachers | 1-2-3-4-5 |
| Floor Space A (Teachers 1 and 2) | |
| Floor work or Rhythmical work | 100 Girls |
| Field Space B (Teacher 3) | |
| Hockey or Baseball in season | 60 Girls |
| Field Space C and D (Teacher 4) | |
| Restricted Physical Education: | |
| Volley Ball | |
| Baseball in season | |
| 9 Court Basket Ball | 50 Girls |
| Corrective and Rest Room E (Teacher 5) | |
| Corrective Physical Education | 40 Girls |
| Duplicate space and equipment for boys. | |

A rotating schedule of activities and teachers—with floor space and field space as above—gives each student a well rounded program of activities. Adequate field and floor space, with a wide range of activities, for the number of students participating are *primary* requisites for a constructive program of physical education.

## II. Organization and Activity Requirement of Regular and Corrective Physical Education

In order to secure corrective values for all, the physical education program should furnish varied activities suitable to the ages and abilities of students in each group.

Fundamental Requirements with classification of students recommended in Chapter XIV:

A. Regular Physical Education—High School:

1. Classification:

Students assigned to teacher and period by grades, 9th, 10th, 11th and 12th year students. Within the period Reilly's exponent system of classification is used. Reilly gives an exponent, a small number for each one of four elements—age, weight, grade, and height. The sum of all of the exponents gives the student his place in the classification system, which may be devised for any group of students. By this method of classification, students of the same mental and physical ability are placed in one group. The small numbers used as exponents for each one of the point elements, age, weight, grade and height, make the bookkeeping in the classification simple.[1]

2. Class Organization:

All students organized into squads of ten or twelve each according to age, weight, grade and height according to exponent grouping.

3. Program of Activity Unlimited—Girls:

a. Yearly Schedule of activities (Rules and Source, page 146).
Posture Training—Restricted Physical Education. (See Chapter XXIII as minimum fundamental material.)
Hygiene—Health Habits. (See pages 144, 145.)
Apparatus: Heavy and Light.
Rhythmical—Folk and Interpretive Dancing and Pantomime.
Athletics—Hockey, Soccer or Speed Ball, Basket Ball, Tennis, Hand Ball, Baseball, Volley Ball, Swimming, Field and Track, Pentathlon, Golf.
Games—Hunting games--Relays.

b. Monthly, Weekly and Daily Schedule of Activity.

1. Regular schedule each week throughout the year.
Tuesday—Posture Training.
Thursday— Apparatus — Swimming — Hygiene — Health Habits.
Friday—Rhythmical.

2. Rotating Schedule for October with 6 squads of girls.
Monday—Sports.
Wednesday—Sports.
Same type of schedule to be applied with sports as outlined above in season throughout the year.

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[1] See Reilly: "New Rational Athletics for Boys and Girls," p. 98, "Point System."

SPORT SCHEDULE

| Hockey | Volley Ball or Elements of Hockey | Tennis & Hand Ball |
|---|---|---|
| Mon.—1 & 2 | 3 & 4 | 5 & 6 |
| Wed.—3 & 6 | 1 & 5 | 2 & 4 |
| Mon.—4 & 5 | 2 & 3 | 1 & 6 |
| Wed.—1 & 5 | 2 & 6 | 3 & 4 |
| Mon.—2 & 3 | 1 & 6 | 4 & 5 |
| Wed.—4 & 6 | 1 & 3 | 2 & 5 |
| Mon.—1 & 4 | 2 & 5 | 3 & 6 |
| Wed.—2 & 5 | 3 & 6 | 1 & 4 |

Schedule provides that:

Each squad play with each other squad.

Each squad have opportunity for a major sport, or a minor sport (or elements of major sport) and for dual games, tennis and hand ball.

4. Program of Activity Unlimited—Boys:
   a. Yearly schedule of activities (Rules and Sources, pages 146, 147).
      Posture Training—Restricted Physical Education. (See Chapter XXIII as minimum fundamental material.)
      Hygiene—Health Habits. (See pages 144, 145.)
      Apparatus—Heavy and Light.
      Athletic Dancing—Selected.
      Athletics—Baseball, Football, Basket Ball, Soccer, Tennis, Hand Ball, Volley Ball, Swimming, Field and Track, Pentathlon, Golf.
      Games—Hunting games—Relays.
   b. Monthly, Weekly and Daily Schedule of Activity—Schedule as for girls, substituting boys' activities.

B. Regular Physical Education—Junior High School.

1. Classification:
   Reilly's system of classification. (See description High School, page 138.)

2. Class Organization:
   All students organized into squads (10 to 12 each) according to age, weight, grade and height, according to exponent grouping.

3. Program of Activity Unlimited—Girls:
   a. Yearly Schedule of activities (Rules and Sources, page 146).
      Posture Training—Restricted Physical Education. (See Chapter XXIII as minimum fundamental material.)
      Hygiene—Health Habits.
      Apparatus—Heavy and Light.

Rhythmical—Folk and Interpretive Dancing—Pantomime.
Athletics—Soccer, Field Ball, 9 Court Basket Ball, Captain Ball, Tennis, Hand Ball, Volley Ball, Net Ball (Newcomb), Swimming, Pentathlon.
Games—Hunting games—Relay.

b. Monthly, Weekly and Daily Schedule of Activity-Schedule as for girls, High School (page 138), substituting girls' Junior High School activities as outlined above.

4. Program of Activity Unlimited—Boys:
    a. Yearly Schedule of activities (Rules and Sources, page 146).
        Posture Training—Restricted Physical Education. (See Chapter XXIII, page 243, as minimum fundamental material.)
        Hygiene—Health Habits. (See pages 144, 145.)
        Apparatus—Heavy and Light.
        Rhythmical—Folk and Athletic dancing.
        Athletics—Soccer, Field Ball, 9 Court Basket Ball, Captain Ball, Tennis, Hand Ball, Baseball, Volley Ball, Swimming—Pentathlon.
        Games—Hunting games—Relays.
    b. Monthly, Weekly and Daily Schedule of Activity-Schedule as for girls, High School (page 139), substituting boys' Junior High School activities as outlined above.

C. Restricted Physical Education—High School and Junior High School—Girls and Boys.

1. Classification:
    a. See Assignment Restricted Physical Education—Classification (Chapter XIV, page 123).
    b. Type classification:
        1. Lithe.
        2. Medium.
        3. Stout.

2. Class Organization:
    a. All students organized into squads according to type: Lithe, Medium and Stout. (See Classification, Introductory Notes, Restricted Physical Education, Chapter XXIII, page 243.)

3. Program of activity restricted:
    a. Yearly Schedule of activities (Rules and Sources, page 148).
        Posture Training—Restricted Physical Education (Chapter XXIII, page 243).
        Hygiene—Health Habits. (See pages 144, 145.)
        Apparatus—Suspension and tilted Balance Boards—

Recommended in Restricted Physical Education. (See Chapter XXIII, page 243.)
Rhythmical—Selected. (See page 148.)
Athletics—9 Court Basket Ball, Captain Ball, Tennis, Hand Ball, Baseball, Volley Ball, Net Ball (Newcomb), Bat Ball, Schlag Ball, Punch Ball, Side Kick (small playing fields to limit distances), Swimming, Pentathlon (running and jumping events excepted), Quoits, Croquet, Archery.
Games—Hunting games—Relays.

b. Monthly, Weekly and Daily Schedule of Activity.
    1. Regular Schedule each week throughout the year:
        Tuesday—Posture Training.
        Thursday—Posture Training.
        Friday—Rhythmical.
    2. Rotating schedule for December with 6 squads of girls or boys—10-12 girls or boys in each squad:
        Monday—Sports.
        Wednesday—Sports.
    Same type of schedule to be applied with sports as outlined above in season throughout the year.

SPORT SCHEDULE

| Baseball or 9 Court Basket Ball | Baseball or 9 Court Basket Ball | Tennis—Hand Ball Quoits |
|---|---|---|
| Mon.—1 & 2 | 3 & 4 | 5 & 6 |
| Wed.—3 & 6 | 1 & 5 | 2 & 4 |
| Mon.—4 & 5 | 2 & 3 | 1 & 6 |
| Wed.—1 & 5 | 2 & 6 | 3 & 4 |
| Mon.—2 & 3 | 1 & 6 | 4 & 5 |
| Wed.—4 & 6 | 1 & 3 | 2 & 5 |
| Mon.—1 & 4 | 2 & 5 | 3 & 6 |
| Wed.—2 & 5 | 3 & 6 | 1 & 4 |

Schedule provides that
Each squad play with each other squad.

D. Corrective Physical Education—High School and Junior High School—Girls and Boys.

1. Methods of Organizing Corrective Classes:

The organization of corrective physical education in high and junior high schools has been a part of the regular physical education regime for a number of years. The organization requires the assignment of one of the physical education teachers to this type of work and the school program so adjusted that boys and girls who need corrective physical education can be scheduled for the particular period when corrective physical education is offered. Placing students in corrective classes in small schools is difficult, but in large schools, where several classes are offered in each subject, there is usually no difficulty in having the students assigned to a period for corrective physical education. The main problem in the high and junior high schools centers around the securing of teachers trained and fitted for the corrective phase of the work (specially true in the men's department) and in obtaining suitable corrective and rest rooms, and corrective equipment.

2. Problems of Organizing Corrective Classes:

   In high schools and junior high schools boys and girls should be assigned to certain periods in the day when corrective physical education classes are scheduled. Assignment to corrective physical education is made upon examination and recommendation of physician and recommendation of supervisor and of physical education teacher. The chart method of classification is recommended. (See Chart Method, Chapter XXI, page 229.)

3. Classification:

   Lithe and Stout Type—Specific Postural Defect. (See Assignment, Chapter XIV, page 123.)

4. Class Organization:

   Squad Organization:
   a. Lithe Type—Specific Postural Defect. (See Introductory Notes, Corrective Physical Education, Chapter XXIV, page 292.)
   b. Stout Type—Specific Postural Defect. (See Introductory Notes, Corrective Physical Education, Chapter XXIV, page 292.)

5. Program of Activity Limited:
   a. Yearly Schedule of Activities Rules and Sources, see page 148). Posture Training—Corrective Physical Education. See Chapter XXIV, and Specific Conditions, Chapters XXVII-XXVIII.)
      Hygiene—Health Habits.
      Apparatus—Suspension (Tilted Balance Board, Chapters XXIV and XXVIII).
      Rhythmical—Folk and Interpretive Dancing—Pantomime.
      Athletics—Captain Ball, Volley Ball, Volley Catch, Net Ball (Newcomb), 6 hole Basket Ball, Tennis, Hand Ball, Baseball, Bat Ball, Schlag Ball, Punch Ball, Side Kick (small fields to limit distances), Swimming, Pentathlon (running and jumping events excepted), Croquet, Quoits, Archery.

Games—Corrective Games:

The recommendation is made that students in corrective classes be encouraged to continue with one or more sports: tennis, swimming, baseball, etc. Sports should be recommended to the student according to his or her particular ability and need, with advice as to which movements to accentuate and which to avoid.

b. Monthly, Weekly and Daily Schedule of Activity.

1. Regular schedule each week throughout the year.
Monday—Corrective Physical Education. (See Chapters XXIV, XXVII and XXVIII.)
Wednesday—Corrective games. (See Chapter XXIX,
Thursday—Corrective Physical Education. (See Chapters XXIV, XXVII and XXVIII.)
Friday—Rhythmical. (See Chapter XXX.)

2. Rotating schedule for November with 4 squads of girls or boys.
Tuesday—Sports.
Same type of schedule to be applied with sports as outlined above in season throughout the year.

| Baseball | Volley Ball or Volley Catch |
|---|---|
| Tues.—1 & 2 | 3 & 4 |
| Tues.—1 & 3 | 2 & 4 |
| Tues.—2 & 3 | 1 & 4 |
| Tues.—1 & 2 | 3 & 4 |

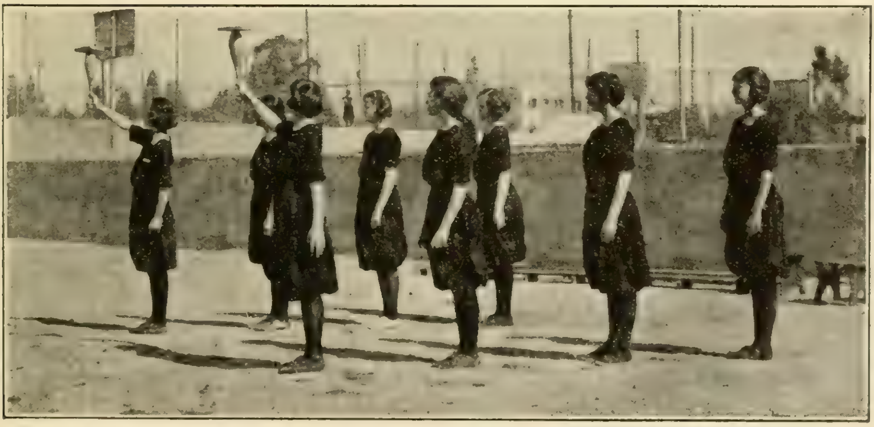

Figure 44
Torch Game, Pasadena H. S., Pasadena, Cal.

### III. Hygiene—Health Habits—High School and Junior High School

*Aim.* The purpose of Hygiene teaching in Junior and Senior High Schools is to furnish information and experience to bring about a definite application of health knowledge to every day life, and to establish correct daily health habits.

The type of material suggested for the health work is taken from situations that may be applied or are a part of the experiences of the students concerned.

The function of the teacher in the Hygiene instruction is to furnish an environment in which health habits and knowledge pertaining to health practices may be improved.

*Content.* The content should consist of accurate and scientific subject matter related to health.

*Method.* The method of teaching hygiene should be, in so far as is possible, a laboratory method in which the students are actively engaged. either in discussion, experimentation, or actual practice.

1. Health Hâbit Chart:
2. Demonstration—Discussion of Subject Matter Related to the Establishment of Correct Health Habits.
   a. Personal and Community Hygiene:
      1. Personal appearance (hair, nails, teeth).
      2. Personal cleanliness (bathing).
      3. Physical education uniform—types of clothing suitable for various occasions.
      4. Personality (enthusiasm, philosophy of life).
      5. Posture.
      6. Feet—correct shoes.
      7. Care of skin, scalp, teeth, mouth, nose, throat, voice, ears and eyes.
      8. Sex hygiene (relating to personal habits).
      9. Mental hygiene.
      10. Growth handicaps (tonsils, adenoids, faults in vision).
      11. Colds.
      12. Constipation (necessity for check on daily elimination).
      13. Responsibility to keep well.
      14. Prevention in case of infection, disease.
      15. Home and School Hygiene (neatness and cleanliness).
      16. Sanitation (home, school, community).

   b. Nutrition:
      1. A twenty-four hour schedule.
      2. Underweight and overweight (students figure out percentage).
      3. A balanced diet.
      4. Correct calorie portions.
      5. Milk.

## HEALTH HABITS—GIRLS AND BOYS[1]

To be checked by student daily. Signed by parent and turned in to be checked by teacher monthly. Credit to be given for actual record and achievement of student.

Name

Signature of Parent

| | M | T | W | T | F | S | S | M | T | W | T | F | S | S | M | T | W | T | F | S | S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Bath daily. | | | | | | | | | | | | | | | | | | | | | |
| 2. Wash hands before each meal. | | | | | | | | | | | | | | | | | | | | | |
| 3. Six glasses water daily. | | | | | | | | | | | | | | | | | | | | | |
| 4. Teeth brushed twice daily. | | | | | | | | | | | | | | | | | | | | | |
| 5. A bowel movement every morning. | | | | | | | | | | | | | | | | | | | | | |
| 6. At least two glasses of milk daily. | | | | | | | | | | | | | | | | | | | | | |
| 7. Three meals daily; eat some vegetables and fruit daily. | | | | | | | | | | | | | | | | | | | | | |
| 8. No tea or coffee. | | | | | | | | | | | | | | | | | | | | | |
| 9. Play part of every day out of doors. | | | | | | | | | | | | | | | | | | | | | |
| 10. Sleeping at least 9 hrs., with windows open. | | | | | | | | | | | | | | | | | | | | | |

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[1] Adapted from Chart presented in "My Health Book," American Child Health Association, 370 Seventh avenue, New York.

      6. Use of stimulants.
      7. Rest.
      8. Exercises.
    c. Simple First Aid Procedures:
      1. Preventive method for emergencies.
      2. First aid in: sprain, cut, bruise, burn, fainting.
      3. Use of adhesive, bandage, iodine.
      4. Water first aid and Shaefer Method in artificial respiration.
  3. Inspection:
    a. Hygiene teaching:
      1. Should make clear to the student the requirements of:
        a. Correct posture.
        b. Correct position of the feet.
        c. Care of skin, teeth, nails and hair.
        d. Personal habits of cleanliness.
      2. Should include regular and systematic inspection and check on:
        a. Correct posture.
        b. Correct position of feet.
        c. Skin, teeth, nails and hair.
        d. Personal habits of cleanliness.
      3. Should include notification to student of signs of remediable growth handicaps with recommendation for medical treatment.

The results of the Hygiene teaching should be the improved physical condition of the student.

Grades in Hygiene should be based upon improved Health Habits and upon the improved physical condition of the student.

## IV. Sources of Material for High School and Junior High School, Applicable to Regular, Restricted and Corrective Groups

A. Regular Physical Education.

*Posture Training.*

Restricted Physical Education. (See Chapter XXIII. The foot, abdominal and lower back exercises in recumbent and sitting positions are recommended for all classes as supplementary to any other exercises used.)

Skarstrom—54 Gymnastic Lessons.

*Apparatus.*

Skarstrom—Gymnastic Teaching, Page 300.

*Rhythmical*—Folk and Interpretive Dancing.

Country Dance Tunes.—Sharpe.
Folk Dances of Denmark.—Burchenal.
Folk Dances from Old Home Lands.—Burchenal.

Dances of the People.—Burchenal.
Folk Dances and Singing Games.—Burchenal.
American Country Dances.—Burchenal.
Folk Dance Book.—Crampton.
Physical Training for Elementary Schools.—Clark.
Clog and Character Dances.—Frost.
School Dances, Vol. I.—Gilbert.
Dances, Vol. II.—Gilbert.
Supplement to Manual in Physical Education.—State Board of Education, California, 1918.
Swedish Folk Dances.—Berquist.
Folk Dances.—Crawford.
Greek and Interpretive Dancing.—Kelso.
Technique in Greek Dancing.—Morgan.
Gymnastic and Folk Dancing.—Hinman.
Text Book of Dancing.—Chalif.
The Dance.—H'Doubler.
Natural Rhythms and Dances.—Gertrude R. Colby.
Country Dances.—Ford Collection.

*Athletics.*

Official Handbook on Athletics for Girls and Women.—Spalding Athletic Library 115R.
Soccer Guide.—Spalding Athletic Library 116R.
Basket Ball.—Spalding Athletic Library 17R.
Field Hockey.—Spalding Athletic Library 38R.
Field Hockey and Soccer for Women.—Frost & Cubberly.
Basket Ball and Baseball for Women.—Frost & Wardlaw.
Handbook of Athletic Games.—Bancroft & Pulvermacher.
Official Rules for Tennis, Volley Ball, Swimming, etc.—Spalding Athletic Library.
Official Rules for Basket Ball for Men.—Spalding Athletic Library.
Official Rules for Baseball for Men.—Spalding Athletic Library.
Official Rules for Football for Men.—Spalding Athletic Library.
Official Rules for Tennis, Swimming, Volley Ball, etc.—Spalding Athletic Library.

*Hygiene.*

Health Knowledge Test.—Gates Strang.
A Handbook of Positive Health.—Women's Foundation for Health.
Nutrition and Growth in Children.—Emerson.
The Newer Knowledge of Nutrition.—McCollum.
Every Girl's Health.—Bellows.

Personal Hygiene Applied.—Williams.
Civic Science in the Community.—Hunter-Whitman.

*Games.*

Games for Playground, Home and School.—Bancroft.
One Hundred and Fifty Gymnastic Games.—Perrin.
Games, Contests and Relays,—Staley.
Athletic Games.—Bancroft & Pulvermacher.

B. Restricted Physical Education.

*Posture Training.*

Restricted Physical Education. (See Chapter XXIII.)

*Apparatus.*

Restricted Physical Education. (See Chapter XXIII.)
Tilted Balance Board Drills. (See Chapter XXVIII.)

*Rhythmical.*

Folk and Interpretive Dancing.
Authors as listed for Regular Physical Education. (Dances with strenuous hopping, leaping and jumping are not indicated.)
Slovak.—Chalif.
La Jota.—Burchenal.
Half Moon.—Burchenal.
Sweet Kate.—Burchenal.
Little Man in a Fix.—Burchenal.
Dainty Step.—Gilbert.

*Athletics.*

Spalding—Rules for sports indicated.

*Hygiene.*

As for Regular Physical Education.

*Games.*

As for Regular Physical Education.
See Corrective Games, Chapter XXIX.

C. Corrective Physical Education.

*Posture Training.*

Corrective Physical Education. (See Chapter XXIV.)
Schedule for Specific Conditions. (See Chapter XXVII.)
Corrective Exercises with Special Application. (See Chapter XXVIII.)
Individual Gymnastics, Drew.
Body Mechanics and Health.—Thomas & Goldthwait.
Manual of Corrective Gymnastics.—Lippitt.
Preventive and Corrective Physical Education.—Stafford.

*Apparatus.*

Corrective Physical Education. (See Chapter XXIV.)
Tilted Balance Board Drills. (See Chapter XXVIII.)

*Rhythmical.*

Dancing—Corrective Physical Education. (See Chapter XXX.)
Dramatics and Pantomime. (See Chapter XXX.)
Folk Dances (adapted). (See Chapter XXX.)

*Athletics.*

See Corrective Games, Chapter XXIX.

*Hygiene.*

As for Regular Physical Education.

*Games.*

See Corrective Games, Chapter XXIX.
For additional material see Bibliography, page 489.

## CHAPTER XVII

## ORGANIZATION OF PHYSICAL EDUCATION—ELEMENTARY SCHOOLS

### I. Physical Education in the Elementary School as Fundamental in Later Training and in Life.

A. Importance of Early Years in Child Development:

The years spent in the elementary schools are becoming more and more to be recognized as the most important time in the entire school life of the child: they reach the largest number of boys and girls and the program at the elementary school age furnishes the background for the child's life. The importance of the early years, the pre-elementary and Junior high school age, as well as the elementary age, cannot be overestimated: These stages in the child's life are the foundation upon which the present and later structure must be built; they are the period of greatest physical growth; they are the formative period for habit and judgment; and the period for fundamental training for mental, social and psychological reactions. Too much time, money and effort cannot be spent in the organization of the pre-elementary, elementary, and Junior high school programs. These important years in the development of the child should receive primary consideration in every school system.

B. Needs of Child:

What should the pre-school, the kindergarten, and the elementary school environment offer the child for its best training and development? The answer lies in the question: What does the child need? The needs of the child may be summarized in a number of different ways, physiologically, biologically, psychologically, etc.

Generally speaking we may say:

1. The child needs a maximum opportunity to grow. Dewey says: "Since growth is the characteristic of life, education is all one with growing. Power to grow depends upon need for others and plasticity. Both of these conditions are at their height in childhood and youth."[1]
2. The child needs health and a strong physical background as a basis for its present and future needs. Jennings says: "How can we carry on efficiently the cultivation of the higher powers, without at the same time interfering with the physical foundations on which they rest? Several points appear to come clearly into view here: The first is a general relation: in order to keep the

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[1] See Dewey: "Democracy and Education."

proper balance, the part of physical activity in our system of cultivation requires increase all along the line.''[1]

3. The child needs an environmental atmosphere of happiness and joy. Again quoting from Jennings: ''To develop any capability there must be something comparable to the appetite that we find necessary for the proper nutrition of the body; the organism must have an appetite for its work. Such readiness to devote itself to the work we call interest; and work done in this condition gives pleasure.''[1]
4. The child needs help in the interpretation of its environment from the point of view of both present and future demands. Dewey also says: ''Plasticity or the power to learn from experience means the formation of habits. Habits give control over the environment, power to utilize it for human purposes.''[2]
5. The child needs social contacts and responsibilities to develop both egotistic and altruistic phases of his character.

C. ''Physical Education''—''Education''; — Inseparable — Synonymous.

If we keep in mind all the above fundamental needs of the child is it possible to separate ''physical education'' and ''education''? Does physical education have a contribution to make to all of the above needs?

1. Does the ''big muscle activity'' contribute to the child's opportunity to grow?
2. Do ''big muscle activity,'' play, health instruction and rest contribute to a strong physical background?
3. Do plays and games contribute to happiness and joy?
4. How better can the child interpret his environment than by investigating and experimenting in activities suited to his age period (mental and physical)?
5. Can development of egotistic and altruistic character traits be brought about in any better way than through play activities? Quoting from Johnson, ''The play impulses of children, then, we may affirm have an all-important office of giving rise to habits and permanent interests.''[3]

Thus we see, in analyzing the needs of child life that ''education'' and ''physical education'' are practically one and the same thing. Johnson says: ''Child culture then, has two offices: First to conserve the biological succession under the best physiological conditions, thereby conserving desirable hereditary traits and powers and effection of best possible organic development; second to devote those powers to acquiring of such knowledge and such habits as will best further the man's social usefulness and individual happiness.''

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[1] See Jennings: "The Biology of Children in Relation to Education" in "Suggestions of Modern Science Concerning Education."

[2] See Dewey: "Democracy and Education."

[3] Johnson: "Education by Plays and Games."

It is not possible or conducive to good results to limit the physical education of the child to a twenty minute period a day. The physical education of the child must receive consideration throughout the entire day, both in school and out of school. Each phase of the school program must be organized with the correct physical development of the child very definitely in mind.

D. Recognized Aims of School Program of Physical Education.

What should the aims of a physical education program in the elementary schools be?

Let us look first and see very definitely what some of the aims of the physical education program are at the present time in elementary schools.

1. In some schools the aim is primarily to fulfill the state law requirements. Fulfillment of law requirement is one desirable aim, but it is not the beginning and the end.
2. A very definite and conscious aim in a number of elementary schools is the improvement in discipline and the spirit or morale of the school.
3. Better health, stronger, happier boys and girls in a general way, is a conscious aim in many schools.
4. To keep the children constructively occupied in free play time; to keep them out of mischief; to keep them from breaking windows; to keep them from fighting are all outstanding aims of teachers and principals in elementary schools.

E. Recognized Results in Programs of Physical Education.

We may state and point out very definite constructive results that have grown out of these thoroughly worth while and clearly understood aims of our physical education programs. In fact, it is recognized that the type of activity and the general atmosphere of the playground, especially at free play time, are strongly indicative of the type of activity and the general atmosphere of the class room work. If there is a definite purposeful activity with serious application of all boys and girls on the playground, there will be found a correspondingly definite and purposeful activity within the school rooms.

As we look into these aims and results carefully, we are thinking primarily of benefits to be derived for the sake of the school: Better discipline, improved school spirit or morale, no fighting, and better health in a general way. Physical education has without a doubt proved itself as having decidedly constructive results from the point of view of the organization of the school. But now that physical education has succeeded in getting mass results for the benefit of the school, should we not advance and look to the benefits to be derived for the individual child?

F. Specific Aims Based upon Individual Needs.

Let us retain all aims and results for the benefit of the school, but let us look more closely to the results that are desirable from the point of view of the individual child.

1. Is the health improved?
   - Is the child underweight?
   - Does the child have fatigue posture?
   - Does the child go beyond the limit of his endurance?
   - Does the child have weak or flat feet?
2. Is the physical education period organized sufficiently from a physiological point of view so that it is not an added strain to the child?
3. Is the child better able to tackle the school work because of the recreational values received from physical education period?
4. Does the physical education program teach the child physical skills and give opportunity for experience in varied types of activities, that will lead to the establishment of "play habits"? Skill in tennis, swimming, baseball, volley ball, basket ball, golf, hiking, etc., all contribute to a constructive leisure time program both in youth and in adult life.
5. Does the individual child have a sense of fair play—a sense of justice and courtesy as a result of his play experiences? Is he making pleasurable associations and contacts for his childhood environment? Is he developing a sense of responsibility through his participation in his play activities?

G. Definite Check on Results Valuable.

The elementary school program should be so organized that we may know the definite reaction on the individual boys and girls. We should be able to know as a result of our school program that we are developing boys and girls with strong physical backgrounds. (See Statistics, Chapter I, page 4.) And if upon analysis we find that our school programs are not producing boys and girls with strong physical backgrounds let us modify and adapt our programs so that we may work towards meeting some of their most outstanding needs.

Let us definitely check our results to see how well we are meeting the needs of the growing boys and girls.

1. What is the percentage of underweight in the school?
   An excellent project for an elementary school—to reduce the underweight of all the boys and girls in the school. Charts that give weight in relation to age, height and physical type are recommended and are issued under the direction of Department of Physical Education, Philadelphia, Pennsylvania. They are based upon the tables by Bird T. Baldwin. Charts may be obtained from Director of Physical Education, Philadelphia Public Schools.
2. What is the percentage of poor posture? (See Statistics, Chapter I, pages 4-14.)
   Elementary schools should work towards at least 90% of the boys and girls in the Very Good and Medium classes. (See Methods of Stimulating Good Posture, Chapter XIX, page 212.)

3. What is the percentage of weak and flat feet?
   As all posture work and all physical conditions are closely related to the condition of the feet, weak and flat feet should be recognized and correction of foot deviations should be provided for in the physical education program. (See Schedule of Exercise—Feet, Chapters XXVII and XXVIII.)
4. What is the percentage of Correctible Growth Handicaps—tonsils, adenoids, defects in vision, hearing, etc.?
5. What is the percentage of decrease in growth handicaps throughout the year?
6. How many boys and girls are actively engaged in free play time? Why are certain children not playing?
   a. Is it due to lack of play space?
   b. Is it due to lack of equipment?
   c. Is it due to lack of shade?
   d. Is it due to lack of knowledge of something to do?
   e. Is it due to weather conditions?

   If all the above conditions are met in the proper way and the children are well, all will be actively engaged in free play time.
7. Are the boys and girls happy in work and in play?
   Healthy, robust girls and boys are happy both in work and in play.
8. How many accidents are there on the playground? How many disturbances, disputes, quarrels, etc.?
   Accidents and fighting will be reduced to a minimum if children have equipment, space and play activities suited to their needs. Playgrounds should be carefully supervised. Supervision does not mean that teachers have to personally direct and supervise during free play periods. If proper equipment is provided and the proper kind of instruction has been given in the instruction period, the leaders among the boys and girls will carry on a constructive program of activities. However, the responsibility of a large number of children playing or working together must be placed upon an adult. Playgrounds at free play times must be supervised: A word of encouragement given here, supplying a bit of equipment for another group, seeing that aggressive children do not take advantage, are some requirements in playground supervision.
9. Last.—What percentage of failures or holdovers are there in school?

If all of the above conditions are met in the elementary school program, and, if boys and girls are classified for their school work according to their mental age and ability, failures in school work would be reduced to a minimum.

## II. The Contribution that the Elementary Plant and Program Should Make to Increase the Corrective Values of Physical Education

A. School room equipment and program:

1. The seats in every school room should be suited to the physical needs and size of the pupils. Seats should be adjustable. (See Correct Seats, Chapter III, page 33.)
2. There should be correct lighting and ventilation. Black boards should be made of the type of material that allows no glare and should be properly placed.
3. The school program in the elementary schools should be largely an activity program. Dewey says: "A bare catalogue of the list of activities which have already found their way into schools indicates what a rich field is at hand. There is work with paper, cardboard, wood, leather, cloth, yarns, clay, sand and the metals, with and without tools. Processes employed are folding, cutting, pricking, measuring, molding, modeling, pattern-making, heating and cooling and the operations characteristic of such tools as the hammer, saw, file, etc. Outdoor excursions, gardening, cooking, sewing, printing, book-binding, weaving, painting, drawing, singing, dramatization, story-telling, reading and writing as active pursuits with social aims (not as mere exercises for acquiring skill for future use), in addition to a countless variety of plays and games, designate some of the modes of occupation.

   "The problem of the educator is to engage pupils in these activities in such ways that while manual skill and technical efficiency are gained and immediate satisfaction found in the work, together with preparation for later usefulness, these things shall be subordinated to education—that is, to intellectual results and the forming of a socialized disposition."[1]

Such a diversified school program aids the application of corrective principles in the physical education department. Long periods of sitting still and being quiet should not be required. Manual activities, moving about, free play, relief periods and organized games should be so interspersed with the so-called regular school subjects that each day will be filled with constructive experiences that will stimulate physical, mental and social growth.

B. Recommended Elementary School Program. (See note, page 157.)

Suggested daily program of activities indicating time distribution for regular school subjects, for physical education, for play and for rest.

8:30- 9:00 Free play supervised.

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[1] Dewey: "Democracy and Education."

9:00- 9:40 Academic program—manual (handwork, etc.), music, art and mental activities.
(2 minute relief period at 9:20 for Grades 1-2-3.)

9:40-10:00. Instruction—physical education.

1. Classification and assignment according to needs. (Chapter XIV, page 127.)
2. Content:
   Weekly program Grades 4-5-6-7-8.
   a. Athletic games.
   b. Individual athletic events.
   c. Hunting games.
   d. Posture training.
   e. Rhythmical activities.
   f. Self testing activities. (See Program, page 162.)
   Weekly program Grades 1-2-3.
   a. Hunting games.
   b. Dramatic games.
   c. Posture training.
   d. Rhythmical activities.
   e. Self testing activities. (See Program, pages 174, 175.)

10:00-10:40 Academic program—manual (handwork, etc.), music, art and mental activities.
(2 minute relief period or rest at 10:20 for Grades 1-2-3.)

10:40-10:50 Play. During this period pupils should have a choice of activity. It should be possible for pupils to participate in:

1. Organized activity:
   a. Dancing.
   b. Athletic games.
   c. Hunting games.
   d. Clay modeling, pottery.
   e. Dramatics.
2. Free play:
   a. Play on apparatus.
   b. Free play with balls.
   c. Play with toys, dolls, wagons, house, etc.

10:50-11:00 Rest.

11:00-11:40 Academic program—manual (handwork, etc.), music, art and mental activities.
(2 minute relief period at 11:20 for Grades 1-2-3.)

11:40-12:20 Lunch.

12:20-12:50 Free play. Choice of activity.

12:50- 1:20 Rest periods.
1:20- 2:25 Academic program—both manual and mental.
Grades 1-2 dismissed.
2:25- 2:35 Free play period (relief period).
2:35- 3:30 Academic program—emphasis on handwork, art, music, stories.
3:30- 4:30 Supervision of free play.

Note: Complies with ruling of Pasadena City Schools[1] and Los Angeles City Schools[2] as to *general* time distribution for physical education, recesses and course of study content. Exception: rest period recommended from 12:50-1:20 and relief periods.

### Program—Elementary Schools

The actual daily program as organized in various elementary schools in California indicates a definite recognition of the needs of the child as to rest, activity and subject matter.

Daily Program Grade 1B September 1927.
Marengo Heights School Los Angeles Mrs. Walker, Teacher.

9:00- 9:05 Roll Call.
9:05- 9:20 Hygiene Inspection.
9:20- 9:40 Music.
9:40-10:00 Physical Education.
10:00-10:10 Recess.
10:10-10:15 Rest.
10:15-10:30 Number Games.
10:30-11:00 Language and Vocabulary Groups.
11:00-11:10 Recess.
11:10-11:15 Rest.
11:15-11:30 Talking Games.
11:30-12:00 Hand Work—Drawing (Alternate).
12:00- 1:00 Noon.
1:00- 1:10 Rhymes and Finger Plays.
1:10- 1:45 Language—Nature Study—Safety Projects.
1:45- 2:00 Story.

Program submitted by courtesy of Grace B. Colestock, Principal Marengo Heights School, Los Angeles, Calif.

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[1] *Bulletin Pasadena City Schools*, September 1, 1927—"Provision for Length of School Days," issued by L. M. Pratt, Assistant Secretary Board of Education.

[2] *Elementary Bulletin No. 1*, September 12, 1927—"List of Subjects to be Taught in the Los Angeles City Elementary Schools"—"Suggested Allotment of Time in Keeping with the Requirements of the Law," issued by Susan M. Dorsey, Superintendent.

Daily Program Grade 3 (Accelerated Group) September 1927.
Grant School Pasadena, Calif. Ruth Campbell, Teacher.

| | |
|---|---|
| 9:00- 9:40 | Discussion Industrial Arts (Projects). |
| 9:40-10:00 | Physical Education. |
| 10:00-10:30 | French. |
| 10:30-10:55 | Number. |
| 10:55-11:05 | Recess. |
| 11:05-11:55 | Research—Reading—History—Geography. |
| 11:55-12:45 | Lunch. |
| 12:45- 1:15 | Rest. |
| 1:15- 1:30 | Music. |
| 1:30- 2:00 | Language—Writing—Spelling. |
| 2:00- 2:25 | Drawing—Nature Study. |
| 2:25 | Dismissal. |

Program submitted by courtesy of F. J. Beeker, Principal Grant School, Pasadena, California.

Daily Program Grade 6 A September, 1927

Room 7 Buchanan Street School Los Angeles Annie M. Boyd, Teacher

| Time | No. of Min. | Monday | Tuesday | Wednesday | Thursday | Friday |
|---|---|---|---|---|---|---|
| 9:00- 9:05 | | Flag Salute and Record of Attendance | | | | |
| 9:05- 9:25 | 20 | Spell. | Spell. | Spell. | Spell. | Spell. |
| 9:25- 9:26 | 1 | Breathing Exercises and Rest | | | | |
| 9:26- 9:45 | 19 | Pen. | Pen. | Pen. | Sloyd and Sewing from 9:00 to 10:30 | Pen. |
| 9:45-10:10 | 25 | Arith. | Arith. | Arith. | | Arith. |
| 10:10-10:30 | 20 | Phys. Tr. | Phys. Tr. | Phys. Tr. | | Phys. Tr. |
| 10:30-10:50 | 20 | Recess | | | | |
| 10:50-11:10 | 20 | Music | Music | Music | Read. | Agriculture and Cooking 10:30-12:00 |
| 11:10-11:40 | 30 | Read. and Arith. | Read. and Arith. | Read. and Arith. | Read. and Arith. | |
| 11:40-12:00 | 20 | Wholesome Living | Nature St. | Manners & Morals | Poem | |
| 12:00- 1:00 | 60 | Noon | | | | |
| 1:00- 1:45 | 45 | Geog. | Geog. | Drawing 1:00-1:50 | Phys. Tr. 1:00-1:20 | Geog. |
| 1:45- 1:50 | 5 | Rest and Breathing Exercises | | | | |
| 1:50- 2:00 | 10 | Story | Story | Story | Story | Story |
| 2:00- 2:30 | 30 | Hist. | Hist. | Hist. | Spell. Review | Arith. Review |
| 2:30- 3:00 | 30 | Lang. | Lang. | Lang. | Lang. | Lang. |

Orchestra—Monday at 10:30 A. M.

Nutrition Class—10:00 A. M. each day.

Program submitted by the courtesy of Mary A. Colestock, Principal Buchanan St. School, Los Angeles, Calif.

### III. Equipment Requirement for Regular Physical Education Program to Secure Corrective Values for All Students

- A. State Department of Physical Education of California—Recommendation Grades 4-8.[1]
    1. Field space—Baseball—Soccer.
    2. Volley Ball Court.
    3. Basket Ball Court.
    4. Tennis Court.
    5. Hand Ball Double Court.
    6. Horizontal Bars.
    7. Horizontal Ladder.
    8. Jumping Standards and Pits.
    9. Balls (basket, volley, soccer, baseball, hand ball, tennis).
    10. Bats.
- B. Recommendation Additional Equipment.
    1. Circular Traveling Rings.
- C. Purpose and Value of Equipment—Grades 4-8:
    1. Should furnish opportunity to provide big muscle group activity and should give opportunity for development of balance and control. (See Balance, Chapter XI, page 97.)
    2. Should furnish space and equipment for organization of athletic games that emphasize:
        - a. Development of neuromuscular skill.
        - b. Team play and coöperation.
        - c. Competitive value.
        - d. Social values.
- D. State Department of Physical Education Recommendation Grades 1-3.
    1. Fields for running games.
    2. Low horizontal bars.
    3. Circular traveling rings.
    4. Bermuda grass turf plots for stunts.
- E. Recommendation Additional Equipment.
    1. Low slides.
    2. Low swings.
    3. Sand box.
    4. Large blocks.
    5. Large rubber balls.
    6. Tilted balance boards.
- F. Purpose and Value of Equipment—Grades 1-3.
    1. Should furnish the opportunity to:

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[1] "Space, Equipment and Supplies for Physical Education in Elementary Schools" —*Bulletin No. 12-C*—issued by State Department of Physical Education, Sacramento, Calif., 1926.

a. "Accomplish the reflex movements connected with the spinal cord."

b. "Coördinate the muscles of the trunk, shoulders and legs as a result of the growth of the cerebellum."

c. "To mature the motor and sensory centers in the cerebrum controlling the heavier and finer muscular adjustments."[1]

2. Should meet the need for Big Muscle Group activities—as creeping, climbing, kicking, swinging, leaping, walking, running, skipping, jumping.
3. Should eliminate elements of danger.
4. Should give opportunities for constructive and creative plays (Sand and Blocks).
5. Should give opportunity for the development of balance and control.

G. Specific Values—Apparatus.

1. Space for running games—recommended to meet the needs for Big Muscle Group Activities.
2. Suspension Apparatus—recommended for climbing, swinging, supporting body weight on the arms, and traveling, etc. (All suspension apparatus should be low to eliminate elements of danger.)
3. Low slides—recommended both for climbing and sliding activities. All children will build up neuromuscular coördination by means of sliding even if no legitimate means are furnished (sliding down cellar doors, banisters, etc.).
4. Low Swings—recommended to satisfy tendencies for rhythmical motion and passive relaxation.
5. Sand Box and larger blocks—recommended to give opportunity for creative and constructive plays and games with sand and blocks.
6. Large rubber balls—recommended for bouncing, throwing, catching, dodging activities.
7. Tilted balance boards—recommended to meet the tendency to experiment with body balance by walking on curbs, rails, fences, etc., for the improvement of neuromuscular control, general postural correction and passive foot and leg correction. (See Use and Value, Chapter XI.)

Summarizing:

To provide an adequate Physical Education program with corrective value for all, the Administration in the elementary schools should provide:

1. Apparatus, equipment, and space for regular groups as recommended above and corrective groups—as recommended in Chapter XV.

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[1] Sies: "Spontaneous and Supervised Play."

2. Apparatus, equipment, and space for free play time and the physical education period should be provided to meet the needs of the number enrolled.
3. The apparatus and equipment must be adapted to the age periods represented in the enrollment.

## IV. Organization and Activity Requirement of Regular and Corrective Physical Education Program

In order to secure corrective value for all, the physical education program should furnish organization and varied activities suitable to the ages and abilities of pupils in each group. (Fundamental Requirement with Classification of pupils recommended in Chapter XIV, page 127.)

A. Regular and Restricted Physical Education—Elementary Schools—Grades 4-8.

1. Classification—Grades 4-8:

Grades 4-5-6 (or 7-8). Boys and girls are organized in separate groups. Reilly's system of classification is used. Reilly gives an exponent, a small number for each one of four elements—age, weight, grade, and height. The sum of all of the exponents gives the student his place in the classification system—which may be devised for any group of students. By this method of classification, students of the same mental and physical ability are placed in one group. The small numbers used as exponents for each one of the point elements, age, weight, grade, and height, make the bookkeeping in the classification simple.[1]

2. Class Organization:

Students organized into squads according to age, weight, grade and height according to exponent grouping. All of the grades from the fourth grade through the sixth or eighth report to the playground for physical education.

Squad Organization:

If there are six classes above the fourth grade in an elementary school, there are six teachers available for physical education. The boys and girls in the six classes will be assigned to separate groups: two teachers assigned to the girls, two to the boys and two for corrective physical education from all groups. In the six classes there are 224 boys and girls, 112 each. This organization requires:

10 Squads of Girls (12 girls to a squad approximately.)
10 Squads of Boys (12 boys to a squad approximately.)

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[1] See Reilly: "New Rational Athletics for Boys and Girls," p. 98—"Point System."

Teacher Assignment:

Teacher assignment with this grouping is as follows:

Teacher 1 Squads 1-4 Girls (4 squads.)
Teacher 2 Squads 5-8 Girls (4 squads.)
Teacher 3 Squads 9-10 Girls (2 squads cor.)
Teacher 4 Squads 1-4 Boys (4 squads.)
Teacher 5 Squads 5-8 Boys (4 squads.)
Teacher 6 Squads 9-10 Boys (2 squads cor.)

The corrective group should be limited to 15-20 pupils.

Squad Organization Feasible for Small Schools.

A similar combination may be made with any number of classes from the fourth grade up in schools in which there are more than two classes above the third grade. For instance: When there is just one class of each 4-5-6 grades —one teacher may handle girls of three groups—one may handle boys and one special corrective.

This grouping of students makes it possible to carry on physical education activities suited to boys and girls according to age periods and to the physiological abilities of the groups.

Classification may be by age, weight, grade, height, or by grade and height alone.

The Reilly classification places girls (or boys) of similar age, weight, grade and height together. Small and younger girls (or boys) fall in Squads 1-4; large and older girls (or boys) fall in Squads 5-8; corrective from all squads in Squads 9-10. If measuring and weighing facilities are not available, pupils may be classified according to height, and the small girls and boys of the lower grades would naturally fall in Squads 1-4, larger girls and boys of the upper grades would fall in Squads 5-8.

3. Program of Activity—Girls—Boys (adapted):
    a. Yearly schedule of activities (Rules and Sources, page 180).

Posture Training—Restricted Physical Education—Elementary Schools (see Chapter XXV).

Apparatus—Restricted Physical Education—Elementary Schools (see Chapter XXV).

Rhythmical—Folk Dancing and Pantomime.

Athletics—Baseball—Volley Ball—Volley Catch—Newcomb—Bat Ball—Side Kick—Punch Ball—Schlag Ball—End Ball—Captain Ball—6 Hole Basket Ball—Tennis—Hand Ball—Pentathlon.

Boys—Soccer (if field is available).

Swimming, Land Drills. Y.M.C.A. or Y.W.C.A. pools are recommended for after school swimming.

Hunting games—Selected.
Relays—Selected.

b. Monthly, Weekly and Daily Schedule of Activity:
  1. Regular Schedule each week throughout the year:
    Tuesday—Posture Training.
    Thursday—Rhythmical.
  2. Rotating Schedule for eight squads of boys and girls:
    Monday—Sports.
    Wednesday—Sports.
    Friday—Sports.

10-12 boys or girls in each squad.

Same type of schedule to be applied with activities as outlined above in season throughout the year.

Sport Schedule—September—October—November

| Baseball | Volley Ball or Volley Catch Newcomb—Tennis—Hand Ball | End Ball | Bat Ball |
|---|---|---|---|
| Mon.—1 & 2 | 3 & 4 | 5 & 6 | 7 & 8 |
| Wed.—3 & 4 | 5 & 6 | 7 & 8 | 1 & 2 |
| Fri.—5 & 6 | 7 & 8 | 1 & 2 | 3 & 4 |

Schedule provides that all of the squads have opportunity for definitely planned schedules of games.

(Squads cannot be interchanged as in High School Schedules because groups cover grades 4-6 and the small pupils of Squads 1-2 (in grades 4) cannot compete against large pupils of Squads 7-8 (grades 6).

Baseball, Volley Ball, Volley Catch, Newcomb, and Tennis may remain on schedule throughout the year because of the value of the skills involved and because of the interest.

Winter Months:

Captain Ball substituted for End Ball.

Punch Ball substituted for Bat Ball.

Spring Months:

Schlag Ball and 6 Hole Basket Ball substituted for End Ball.

Pentathlon substituted for Bat Ball.

B. Corrective Physical Education—Elementary Schools—Girls and Boys.

1. Methods of Organizing Corrective Classes.

The organization of corrective physical education in elementary schools is a departure in the field of physical education and has come into its own only within the last few years. There are many school systems that have some phase of corrective physical education in the elementary schools. Following are a few of the methods of organization that have been used and could be adopted by any school system:

a. Establishment of a corrective and a rest room in each elementary school; assignment of a corrective physical education instructor one-half day or more each week to each elementary school. Recommended as practical.

Squad organization of upper grade work with corrective physical education in fourth, fifth and sixth grades handled by classroom teacher. Visiting teacher for corrective physical education once a week for squads and once a week for organization of lower grade work. (See pages 169, 175.)

The handling of the special posture classes by the classroom teacher with instructions once a week by a corrective physical education teacher, under the direction of the supervisor, makes it possible for boys and girls in the fourth, fifth, and sixth grades to have the corrective exercises daily. If the work were given over entirely to the corrective teacher, the corrective exercises would have to be limited to the day or days that she could be assigned to each building.

This system is used in Pasadena city schools (see page 171). It is also used in one elementary school in San Francisco under the direction of Mrs. Jane Arnold Graves, assistant supervisor of Physical Education.

A combination of the lower grades may be made—one teacher handling all regular physical education of grades one and two and another teacher handling boys and girls needing corrective physical education in these grades, with instruction by visiting teacher once a week.

b. Establishment of centers for corrective physical education. Recommended as practical. The assignment of boys and girls in four or five elementary schools for corrective physical education at the school that is most centrally located. The assignment of a corrective physical education teacher to the school; the establishment of a corrective room and equipment in this school.

Some of the problems that present themselves in this plan are: (1) Time lost from regular school work because of traveling from one school to another. The boys and girls assigned to corrective, because of health conditions are apt to be the ones who can least afford time spent away from regular school work. (2) Difficulty in obtaining means of transportation. (3) Difficulty of having the children who are undernourished and who have general fatigue posture, with flat or beginning flat feet, walk long distances to neighboring schools.

An excellent modification of the corrective center is to have the corrective teacher visit regularly the surrounding schools in her district and organize special posture or corrective classes to be carried on by the classroom teacher under her supervision. (As under a.) (See Report Corrective Physical Education, Los Angeles City Schools, Chapter I, page 7.)

The establishment of corrective centers in a large school is valuable because even if only a few pupils come from surrounding schools, an instructor can be kept busy with the children who need corrective physical education in the school where the center is established, and with the organization and supervision of corrective classes in surrounding schools.

This system and modification of it have been in operation in the Los Angeles City Schools for several years under the direction of Dr. Sven Lokrantz, Director of Health and Corrective Physical Education. (See Report Corrective Physical Education, Los Angeles City Schools, Chapter I, page 6.)

c. Establishment of a corrective and rest room in each school, with the assignment of a *regular* physical education teacher to each school—the assignment to cover the corrective physical education also. Not recommended.

This system is not practical because the regular physical education in a large elementary school is a heavy program in itself. If a physical education teacher is assigned to handle all classes of physical education daily, there is no time for such a teacher to handle the corrective physical education for that school. However, a program could be worked out in the assignment of a regular physical education teacher to each elementary school so that several periods a day could be left free for corrective physical education classes. Such a program could be arranged by having some of the classroom teachers handle their own classes in physical education, all of the time, or by having all of the classroom teachers handle their own groups for physical education part of the time. This method usually cannot be made satisfactory because one teacher who handles, or is responsible for all of the regular physical education in a large elementary school has more to handle with the regular work than an individual can do well. (See Teacher Problems, page 177.)

d. Establishment of a corrective and rest room in each school with the assignment of a *corrective* physical education teacher to each school. This would be a satisfactory method if school systems could afford it.

e. Establishment of corrective centers to be operated on Saturdays. Teachers may be assigned to corrective centers in various parts of the city on Saturday morning. Teachers are paid continuation salaries for this work. Children from various schools all over the city are recommended to go to the corrective center. With this organization of classes the problem of transportation has to be met. It is solved in some cities by women's clubs who wish to do philanthropic work, who volunteer to call for and deliver the children to their homes.

This system has been in operation in the San Francisco Public Schools under the direction of Director of Department of Physical Education.

f. In Newark, N. J., the following plans are in use:[1]
   1. Corrective classes organized at the same time as a regular gymnasium class under the direction of a second specially trained teacher, and in another gymnasium.
   2. A corrective center for four or five additional schools after school hours.
   3. Corrective classes at vacant periods in the regular gymnasium by the regular physical education teacher.
   4. One centrally located corrective center to which all schools send children.

g. Assignment of boys and girls to posture clinic under the direction of an orthopædic surgeon.

Boys and girls are recommended to go both on school days and on Saturdays to orthopædic clinics. In extreme cases boys and girls are excused from school work to go for exercises and treatment on school days.

The clinic or orthopædic department sends the prescription for the exercises to the school and the school coöperates in carrying out the required schedule of exercise.

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[1] Meyer: "Corrective Gymnastics as Applied to School Work," *American Physical Education Review*, November, 1926.

2. Problems in Classification.

   The methods of classifying and selecting the boys and girls in elementary schools who need corrective exercises must be definite and accurate.

   a. Medical examination:
      1. Recommendation for corrective classes is made by the school physician.
      2. Examinations are given by the school physician to all pupils in corrective classes. Physician's recommendation as to conditions and needs are filed with the corrective card.

   b. Modified Bancroft Triple Posture Test Method, squads 4-8 grades.

      The supervisor gives the squads of girls and boys a Modified Triple Posture Test (see Triple Posture Test, Chapter XIX, page 213): the class is in formation for regular formal exercises. The boys and girls who have extremely poor posture, both in relaxed and attention position, and those who have flat feet and pronated ankles are placed in one line to the right of the group. Marching and exercises are given and other pupils are taken out for incorrect positions, for relaxed positions, for lack of coördination, etc. The first segregation can be made in the regular twenty-minute physical education period. Out of a hundred girls (or boys), probably about thirty will have been taken out for further examination. These thirty girls (or boys) are retained after the others have been excused and given a thorough posture examination. (See Examination, Chapter V, page 41.) Fifteen or twenty pupils with the most outstanding postural defects will be chosen for the corrective class from the original thirty.

   c. Posture Examination.

      The posture examination is given the fifteen pupils in the presence of the teacher who is to take charge of the group. A card indicating postural defects is made out for each pupil. The card indicates the degree of defect, as first, second, or third degree flat feet, etc. (See Record, Cards, Chapter XXI, page 226.)

   d. Modified Bancroft Triple Posture Test Method for grades one, two and three.

      The same method is applied to grades one, two and three. The supervisor takes one grade at a time, chooses the six or eight outstanding posture cases in the group. The six or eight pupils are given a thorough posture examination and three or four with the most exaggerated postural conditions are chosen for the corrective group.

e. Chart Method.

The chart method of classification may be used. (See Methods, Chapter XXI, page 229.)

f. Warning in Organization of Corrective Classes.

Care must be taken in selecting the boys and girls with poor posture that they do not get the idea that "something terrible is the matter with them." They must not be made to feel that they are badly off in comparison with others in the group. The approach to the group should be made from a positive point of view. In giving the Triple Posture Test the following suggestions may be helpful to teachers:

Ask the boys and girls to stand as tall as possible. Ask them to give you their best standing position. Tell them you are looking for the boys and girls who know how to stand well and also for those who do not know how to stand well. This makes the group try hard and you are apt to get a great many exaggerated "good positions"—stiff, unnatural posture. This gives you the opportunity to see which boys and girls in the group know how to correct their positions in the right way. (See Posture Cues, Chapter III, p. 33, and Chapter XIX, p. 210.) Tell the boys and girls who are chosen because they do not stand quite so well that they are the ones who have to work the hardest. Appeal to their pride and say that you will have only boys and girls in the group who are willing to work hard to correct their positions. Boys and girls like to think they have something hard to do and will respond quickly to a challenge for a difficult task. There is bound to be some feeling when a few people are taken from the group for special work. The class should be organized on the basis that the work is a special opportunity and privilege and is granted only to those who are interested and wish to help. The class must not be withdrawn from the large group entirely. It should have one period of games (adapted) on the playground and one period of rhythmical work with the group. (See Program, page 173.)

It is necessary to make these boys and girls see and understand that they do not know how to assume and maintain a correct standing position. They must know definitely their own individual posture problem and what to do to correct it. The problem must be put to them from this point of view: "Here is a difficult task for you. You are a bright boy (or girl) and of course you can do it." The point must be made that the boy (or girl) has to do the work and that the teacher can only help in guiding him and giving him the right exercises to do. After indicating to the boy (or girl) how he can correct his hollow back, or his protruding abdomen, or his poor head position, ask the boys and girls to tell each other what they think can be done to make them have better positions. The pupils always give a good solution: "Put your stomach in," "Put your head back," "Chin in." Oftentimes when a new boy (or girl) comes to the school, if he happens to have poor posture the pupils bring him with them to the corrective squad and say, "Here's John, he should have these exercises too." When boys and girls pick out a fellow pupil you may be sure that the child is in need of the exercises.

g. Cases with Structural Defects Referred:

Structural defects referred. (See Studies in Posture, Chapters VI, VII and VIII.)

Structural defects and postural defects in transitional stages are referred to an orthopædic surgeon, or to the orthopædic clinic. Exercises are given for structural defects and for defects in transitional stages only under the direction of an orthopædic surgeon. If students with structural defects and defects in transitional stages do not follow the recommendations to see an orthopædic surgeon they are assigned to rest, or to a recreational type of game program.

h. Organization of corrective classes for grades 1-2-3.

1. Special Teacher:

As the posture problems are not so numerous in these grades and as they can be corrected more readily than in later years, a physical education teacher can be assigned one-half day to a large elementary school once a week to take the corrective classes in that school in the lower grades. In this way one teacher can handle ten schools, meeting the classes once a week.

2. Combination Classes—Lay Teacher:

There may be a combination of two grades; one teacher handling the regular physical education and one handling those who need corrective physical education.

3. Problems in Organization.
   a. Reëxamination and Promotions:

      Reëxamination of boys and girls in special posture classes should be made at the close of each semester. Promotions should be made to regular physical education for those who have made the required improvement.

   b. Importance of Establishment of Corrective Physical Education in Elementary Schools. (See Chapter I, page 15.)
      1. Growth defects are corrected more easily and more quickly during the early years of a child's life. It is important both to prevent and to correct postural defects during the growing period. (See Wolff's Law, Chapter IX, page 81.)
      2. Malnutrition and other accompanying growth handicaps and fundamental causes of poor posture are more easily corrected and removed in the early years.
      3. Structural defects may be prevented in later years if functional defects are corrected in early stages.
      4. The establishment of correct posture habits in early years prevents postural defects in later years.
      5. Many postural defects in transitional or structural stages cannot be corrected in later years. They may be prevented or definitely corrected in early years.
      6. The training in the lower grades and in the younger years serves as a foundation for the work in the upper grades and in later life. A good superstructure cannot be built upon a poor foundation.
      7. It is easier to secure and hold the interest of the younger children in the fundamental posture work.

   c. Value of Program of Activities ''adapted and modified'':

      The modified program of activities as outlined for corrective classes, with exercises in recumbent and sitting positions and with special emphasis on foot exercises is a step forward in the treatment of all exaggerated cases and is a constructive method of dealing with them as compared to the old régime of having all in one class or group participate in one type of activity, with no classification or segregation of individuals for special needs.

   d. Teacher Problems:

      In the assignment of classroom teachers to the special posture or corrective physical education classes in the elementary school, teachers are assigned who have a special interest in the individual child and in health and physical education problems.

In the group assigned to the work in one year in the Pasadena system there were four teachers who had been under the care of an orthopædic surgeon for foot conditions; two who were mothers with children under the care of an orthopædic surgeon; and five out of the group who had had some special training in health and corrective physical education. In any group of well trained elementary teachers, at least in the cities, there will be found teachers with similar backgrounds. It is possible to get splendid response and interest in organization of special posture classes in elementary schools with teachers of this type or a similar background of training and experience. All teachers who take up this work should have some interest in and a desire to understand the postural problems that are common among school children.

4. Essential Points in Organization.

   The following points must be emphasized in organizing special posture classes for the classroom teachers:

   a. The pupils must be classified and a posture examination given by an individual with requisite training and qualifications.
   b. Medical examination.
   c. Exercises outlined and carefully supervised by trained individual.
   d. Orthopædic Surgeon—Consultant:

      Structural cases and postural cases in transitional stages should be referred to an orthopædic specialist.
   e. Structural cases and postural cases in transitional stages assigned to rest if they do not follow the recommendation to see an orthopædic surgeon.

5. Interest and Results.

   The results of training the classroom teacher in powers of observation and methods of procedure in postural problems are far reaching. As the amount and kind of academic training a boy or girl is able to get is dependent upon his physical condition, the problem of the physical condition of the pupil must become the problem of the classroom teacher. The classroom teacher has the pupils under her supervision the entire school day, and she is responsible for instruction in the subject matter outlined in the curriculum. If the pupil is not able to grasp the subject matter because of malnutrition, because of fatigue posture due to lack of rest or other reasons, the teacher should be made aware of methods to improve these conditions. When the classroom teacher is given suggestions to correct poor posture and to improve other physical weaknesses, to make use of during the physical education period, she carries this information over into her classroom work and applies these methods of procedure in the classroom throughout the entire day. Also when the special posture classes are under the direction of the classroom teachers, and when good posture is stressed in all physical education work, there should be a ''carry over'' on the part of all teachers into the classroom work. It is not of much use to teach good posture for twenty minutes out of the school day and to disregard the principles and forget about it throughout the rest of the day.

The classroom teachers must concern themselves more and more with the physical background of the boys and girls.

Klein and Thomas say: ''To get the best results the organization to teach body mechanics in grade schools should consist of an orthopædist, supervising physical education teachers, and the grade teachers—to mention the most important last. Good results may be obtained by a staff consisting of supervising physical education teachers and grade teachers, or grade teachers alone, provided the supervisors and the grade teachers have a thorough understanding of the basic principles of good body mechanics. If the grade teacher must work alone, posture work should be undertaken only after she has become familiar with the fundamental principles and the exercises by personal instruction or thorough study.''[1] Without a strong physical background it is not possible to give the training necessary to equip the youth for his future life and work. An excellent training and equipment without a strong physical background is of small avail.

There must be brought into the consciousness of the lay teacher more and more the physical needs of the boys and girls. Methods of overcoming the physical defects must become problems of the school, both of the principal and the teacher. Teachers are recognizing now that the boys and girls who have been underweight, and who have brought their weight up from ten to twenty pounds by means of rest, milk, mid-morning lunch, etc., begin to improve immediately in their grasp of the subject matter, and in their general behavior. When some of these facts establish themselves firmly in the minds of the administrators and teachers, they will get back of the efforts to make rest periods, mid-morning lunch, bathing facilities, corrective rooms and corrective exercises a part of the regular school program and not consider them extras and interruptions to the regular procedure.

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[1] Klein and Thomas: "Posture Exercises," No. 165, Children's Bureau, Washington, D. C.

6. Classification:
   Lithe and Stout Types—Specific Postural Defect. (See Assignment, Chapter XIV, page 127.)

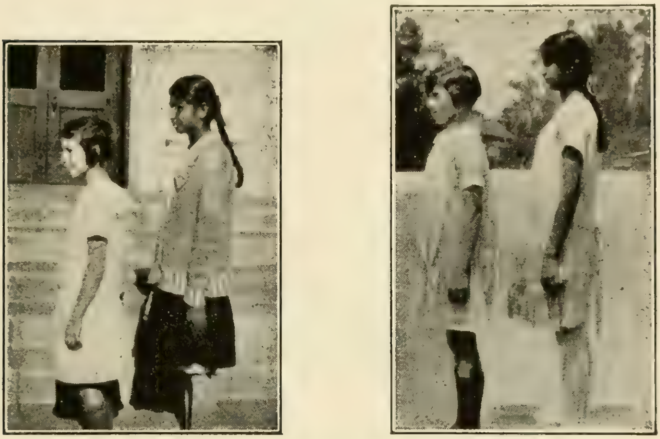

FIGURE 45

Effect of Group Corrective Work from November, 1925, to June, 1927 (Regular Record)

7. Class Organization.
   Squad organization:
   a. Lithe type—Specific Postural Conditions. (See Int. Note Ch. XXVI.)
   b. Stout type—Specific Postural Conditions. (See Int. Note Ch. XXVI.)
8. Program of Activity Limited:
   a. Yearly Schedule of activities—(Rules and Sources, page 180.)
      Posture Training—Corrective Physical Education—Elementary Schools (Chapters XXVI and XXVII).
      Apparatus—Suspension and tilted balance board—Corrective Physical Education (Chapters XXVI and XXVII). Tilted balance board (Chapter XXVIII, page 424).
      Rhythmical—Folk Dancing—Pantomime.
      Athletics—Volley Ball—Volley Catch—Net Ball (Newcomb)—6 Hole Basket Ball—Tennis—Hand Ball Baseball—Bat Ball—Schlag Ball—Punch Ball—Side

Kick (small fields to limit distances)—Pentathlon (running jumping excepted)—Croquet.

b. Monthly, Weekly and Daily Schedule of Activity.

1. Regular Schedule each week throughout the year:
Monday—Posture training.
Wednesday—Corrective games.
Thursday—Posture training—Health Habits.
Friday—Rhythmical.

2. Schedule of athletic games for 2 squads for October.
Tuesday—Sports.

Other games outlined above substituted throughout the year.

Tuesday—Squads 1 and 2 Volley Catch.
Tuesday—Squads 1 and 2 Baseball.
Tuesday—Squads 1 and 2 Volley Catch.
Tuesday—Squads 1 and 2 Newcomb.

C. Regular Physical Education Program—Grades 1-2-3.

1. Classification—according to grade.

2. Class organization—according to grade.

3. Program of Activity Unlimited.

a. Yearly Schedule of Activities (Rules and Sources, page 180).

Hunting Activities.
Rhythmical and Dramatic Activities.
Self-testing Activities.
Posture Training.

b. Monthly, Weekly and Daily Schedule of Activity:

1. Grades 1 & 2. (Ref. Abbreviations in Chart, P. 175.)

| | Monday Hunting Games | Tuesday Rhythmical | Wednesday Hunting Games | Thursday Rhythmical | Friday Posture Tr.—Self-Test. Act.—Foot Exercises |
|---|---|---|---|---|---|
| Sept. 3rd wk. | Bird Catcher S. p. 64 | Chimes of Dunkirk S. p. 23 | Teacher & Class C. p. 55 | How do you do my partner S. p. 32 | Play on apparatus Triple Posture Test, Foot Ex. |
| Sept. 4th wk. | Ten Steps with Posture element p. 449 | Round the Village C. p. 53 | Black & White C. p. 343 | Chimes of Dunkirk S. p. 23 | " |
| Oct. 1st wk. | Vis a Vis with posture board or book on head | Shoemaker's Dance C. p. 58 | Flower & Wind S. p. 69 | Dance of Greeting S. p. 24 | " |
| Oct. 2nd wk. | I say stoop I say stand p. 465 | Dance of Greeting S. p. 24 | Hunt S. p. 71 | Shoemakers' Dance C. p. 58 | " |
| Oct. 3rd wk. | I am very very tall (correct posture) S. p. 34 | I See You S. p. 35 | Bull in Ring B. p. 56 | Did You Ever See a Lassie S. p. 26 | " |
| Oct. 4th wk. | Cat & Rat S. p. 65 | Round the Village C. p. 53 | Ten Steps With Posture element, p. 449 | I See You S. p. 35 | " |

2. Grades 2 A & 3. (Ref.—Abbreviations in Chart, P. 175.)

| | Monday<br>Hunting Games | Tuesday<br>Hunting and Athletic (of low Organ) | Wednesday<br>Postural and Developmental Activities | Thursday<br>Rhythmical | Friday<br>Self.-Test. Act.—Foot Ex. |
|---|---|---|---|---|---|
| Sept. 3rd wk. | Hip Tag<br>S. p. 70 | Newcomb (Net ball)<br>p. 445 | Res. Phys. E. Ele. Schools Chapter XXV Adapted | A-Hunting We Will Go<br>S. p. 33 | Play on Apparatus: Bars, Swings, Slides, etc. |
| Sept. 4th wk. | Hill Dill<br>S. p. 70 | Schlag Ball<br>p. 443 | " | Seven Jumps<br>S. p. 58 | Swings, Slides etc. |
| Oct. 1st wk. | Whip Tag (Beater Move)<br>B. p. 205 | Dodge Ball<br>B. p. 364 | " | Children's Polka<br>S. p. 22 | Foot exercises |
| Oct. 2nd wk. | Bull in Ring<br>B. p. 156 | Punch Ball<br>p. 443 | " | Seven Jumps<br>S. p. 58 | " |
| Oct. 3rd wk. | Ten Steps with Posture element<br>p. 449 | Newcomb<br>p. 445 | " | Nixie Polka<br>S. p. 48 | " |
| Oct. 4th wk. | The Hunt<br>S. p. 71 | Long Ball<br>M. p. 165 | " | A-Hunting We Will Go<br>S. p. 33 | " |

S.—Supplement to Manual of Physical Education for the Public Schools of the State of California.

B.—Bancroft—Games for the Playground.

C.—Clark—Physical Training for Elementary Schools.

M.—Manual of Physical Education Public Schools of California.

Suitable activities for other months will be found in authors listed on page 181.

D. Corrective Physical Education—Grades 1-3.

1. Classification:

Lithe and Stout Types—according to specific postural defects.

2. Class Organization:

Individual assignment to special teacher of corrective physical education.

NOTE: The organization of corrective physical education from the kindergarten through the third grade may be taken care of by the assignment of a physical education teacher to an elementary school for a half day or more each week. This teacher should take care of the boys and girls with outstanding postural conditions in these grades. The classes should be limited to from four to six pupils and the periods should be from twenty to thirty minutes long. The time for the work is to be taken from the school program. The assignment for the remaining four days of the week may be "rest" or "regular physical education" with the class according to the physical needs of the individual pupils.

3. Program of Activity Limited:

   Program of activities adapted to meet the individual needs of the pupils.

## V. Hygiene—Elementary Schools

Hygiene features that are within the realm of all Elementary Schools that would make a large contribution to the health and physical development of the pupils:

A. Clean School Rooms.

More emphasis could well be placed in all school houses on cleanliness. A system of participation by children in certain phases of keeping the school houses and yards clean and orderly is being worked out satisfactorily in many schools.

B. Larger numbers of beautiful and decorative objects in halls and rooms: pictures, bowls, flowers, etc. Children all respond to beautiful things and react well to a pleasing environment.

C. Constructive measures to reduce underweight (using type classification charts referred to on page 153, Organization.

1. Rest periods at school and at home.
2. Milk and mid-morning lunch. Lunch mid-afternoon.
3. Instructions in diet.
4. Hot lunches at noon.

Even if food and rest at home cannot be controlled, the rest and food at school can be made to accomplish excellent results. Usually the homes, even the poorest ones, will cooperate to a certain extent.

D. Correct seats for each child.

Teach each child to sit, stand and walk correctly. (See Posture, Chapter III, pages 32, 33, Correct Sitting and Walking.)

E. A full length mirror in each hall.

If children are in the habit of seeing the outline of the entire body frequently, interest in good posture would be greatly stimulated.

F. Clean bodies for all.

1. Shower bath:

   A clean body should be the first requisite for learning.
2. Wash rooms:

   A sufficient number of wash rooms so that all hands could be washed before lunch and after play periods.
3. Hands should be washed each time after going to the toilet.

G. The wash rooms and toilets should be clean, well lighted, well ventilated and well taken care of. The walls of wash rooms and toilets should be light in color and should be kept spotlessly clean.

H. Corrective and rest room:

Corrective and rest room as Recommended Equipment, Chapter XV, page 131.

I. Dental and medical inspection at least once a year, notifying parents of physical condition of the child.

If these few hygiene features were made a part of the school program of all elementary schools, the teaching of hygiene as such could be done away with. The establishment of correct habits should constitute the hygiene program of every elementary school.

## VI. Teacher Problems

A. Organization of Physical Activities by Classroom Teacher:

The physical education of the elementary school should be carried on by the classroom teacher. When the elementary teachers teach the physical education to their own classes there are definite advantages for both teacher and school.

Values to teacher and school may be summarized as follows:

1. Teacher gains knowledge of interests of children.
2. Better understanding of child caused through understanding of play interests.
3. The spirit of play on the playground largely determines the spirit of work in the classroom, therefore, it should be controlled and directed by classroom teacher.
4. The physical education activities are the real interests of the children. If teachers are not interested they are losing a strong means of communication and contact.
5. Teacher and pupils alike need the community of interest in the joy and play program.
6. Organization within the school depends largely upon the organization on the playground; therefore it should be guided and directed by the principals and teachers.

B. Constructive Assistance should be given by Department of Physical Education.

The recommendation that the elementary school teacher should handle the physical education does not minimize the importance of the help that should be given to the schools by the department of physical education.

1. A weekly or bi-weekly visit of supervisor or special teacher is recommended.
2. Work should be definitely outlined and planned.

3. Practical help and suggestions should be given through classification of pupils, organization of classes.
4. Department should see to it that the teachers have an intimate knowledge of the subject matter, the aims of physical education and results obtained.

C. Organization of Physical Activities by One Trained Teacher:

The load of the physical education program in any elementary school is so heavy that, if it is carried efficiently, it is entirely too much for one teacher, even if the teacher is trained in physical education. If a trained teacher is assigned to each elementary school, an efficient program of physical education could be worked out by having the classroom teacher handle the work, assisted certain days of the week by the physical education teacher. Certain phases of the work as corrective, rhythmical, etc., could be assigned to the special teacher.

D. A Typical Physical Education Elementary School Program:

How many times has one seen a physical education teacher assigned to an elementary school with the following program, or a similar one?

| | |
|---|---|
| 8:30- 9:00 | Supervision of playground. |
| 9:00-11:45 | Instruction of classes, one at a time, beginning at 9:00, another at 9:20, a third at 9:40, etc. |
| 11:45-12:15 | Lunch. |
| 12:15- 1:00 | Supervision of playground. |
| 1:00- 1:15 | Rest. |
| 1:15- 1:30 | Instruction of class, etc., until 3:30. |
| 3:30- 5:00 | Organization of games—supervision of playground. |

The teachers are very apt in a case like this to discard all interest in the program and to place upon this individual the entire responsibility for the organization, instruction and supervision of all physical education and playground activities. The responsibility for this work is of sufficient importance that it should be borne by the entire school faculty.

E. Platoon System:

The platoon system, or alternating system as adopted in Gary, Indiana, and other cities, is one in which several teachers are assigned to playground work and to carry on physical education activities throughout the day on the playground. The program is organized on a departmental plan: one teacher teaches art, one teaches regular subjects, one teaches music and one teaches physical education. of four grades (or a similar assignment of subjects). The teachers exchange classes, so that no extra teachers are required.

With this plan of school organization, a system for teaching corrective physical education may be worked out. If the school is large enough so that there are three or four physical education teachers, a division of work may be made so that one teacher may handle the regular physical education of two classes and a second teacher may handle the corrective physical education of the same classes.

### VII. After School Activities

Playgrounds should be open until four thirty or five o'clock, according to the needs of the district.

If equipment, suitable play space are furnished (in shade, or with some protection from the glare, if glare is strong) and activities have been taught during the instructional period, the boys and girls will carry on a constructive play program with the right kind of supervision. (See page 154.)

There should be opportunity also for children who wish to participate in games requiring less motor activity: sand, clay modeling, ping pong, croquet, etc.

The playground should be supervised by all teachers in turn: no one teacher should be required to have the responsibility more than two afternoons a week. All teachers should be paid a large enough salary and the school work so organized that supervision of play activities after school twice a week would be no extra burden.

The recommendation is made that all teachers participate in this type of work because the play activities and interests of the child are the keynote of the child's educational program. No teacher in an elementary school can afford not to have this contact with the child. No teacher can afford to be without the knowledge and understanding of the child that this contact and experience give.

In many cities special physical education teachers are assigned to elementary schools because elementary teachers are not able for one or more of many reasons, lack of training, interest, not physically able, etc., to participate in the activities required for the physical education program. The person who wishes to go in for elementary teaching should have a great deal of interest and some experience and training in physical education. If teachers are to have charge of the training of boys and girls by means of activity programs, and have no interest or understanding of these programs, the training of boys and girls of elementary school age, must of necessity fail in its purpose.

**VIII. Sources of Material, Elementary Schools—Applicable to Regular and Corrective Groups.**

*Posture Training.*

Restricted Physical Education—Elementary Schools. (See Chapter XXV.)

Corrective Physical Education—Elementary Schools. (See Chapter XXVI.)

Schedules for Specific Conditions. (See Chapter XXVII.)

Corrective Exercises with Special Application. (See Chapter XXVIII.)

Indivdual Gymnastics.—Drew.

Body Mechanics and Health.—Thomas and Goldthwait.

Manual of Corrective Gymnastics.—Lippet.

For additional references see Bibliography, see Chapter XXXII.

*Apparatus.*

Apparatus—Restricted and Corrective Physical Education. (See Chapters XXV and XXVI.)

Tilted Balance Board Drills. (See Chapter XXVIII.)

*Rhythmical and Folk Dancing.*

Supplement to Manual of Physical Education, State Board of Education, California.

Dances of the People.—Burchenal.

Folk Dances of Denmark.—Burchenal.

Folk Dances from Old Homelands.—Burchenal.

Folk Dances and Singing Games.—Burchenal.

Folk Dance Book.—Crampton.

Natural Rhythms and Dances.—Gertrude R. Colby.

Physical Training for Elementary Schools.—Clark.

*Pantomime.* (See Chapter XXX.)

*Athletics.*

Rules for Tennis, Volley Ball.—Spalding.

Athletic Games—Captain Ball, Punch Ball, End Ball, etc.—Bancroft.

Corrective Games, Chapter XXIX.

*Hygiene.*

Civic Science in the Community.—Hunter Whitman.

Health Habits, Books I & II.—Maroney, Burkhard and Chambers.

Personal Hygiene Applied.—Williams.

*Hunting Games.*

Supplement to Manual of Physical Education, State Board of Education, California.

Physical Training for Elementary Schools.—Clark.

Games for Playground, Home and School.—Bancroft.

One Hundred Fifty Gymnastic Games.—Harper.

Play Activities for Elementary Schools.—Dorothy La Salle.

An Athletic Program for Elementary Schools.—Leonora Andersen.

*Corrective Games.* (See Chapter XXIX.)

For additional material see Bibliography, page 485.

# PART III

# CHAPTER XVIII

## METHODS: EXPLANATORY NOTES—ALL SCHEDULES

### I. Principles Involved.

A. Definition of Exercises:

Exercises within the schedules are defined in two ways:

1. Specific, as Head-Upper Back, etc. Each segment of the body is named, followed by the exercise for that particular segment.
2. General, Big Muscle Group, Mimetic, Jump, etc. Exercises involving the use of Big Muscle Groups with general recreational and developmental values are given.

B. Segmental Control (see Segmental Control, Chapter XII, page 109):

It is a difficult problem in correcting poor posture in group work to bring to the pupils a consciousness of the individual segments to be corrected. Therefore, in a majority of exercises the individual segments are named so that teacher and student may know the particular part of the body upon which the attention is to be concentrated. The student's aim should be:

1. To correct the individual segments of the body.
2. To correct the body segments in relation to each other.
3. To correct the body segments in relation to general body alignment.

C. Sequence of Exercises in Series—High School, Restricted and Corrective—Elementary, Restricted and Corrective:

In each series of exercises, the sequence, with the reason, is given in the Introductory Notes. It should be understood that no order of exercise is recommended as being superior to all others. In fact, no one order should be strictly adhered to. Emphasis should be placed by individual teachers on the work, segmentally, according to the needs of the group. The principles involved that are emphasized and reëmphasized in all of the schedules are:

1. The values of exercises in recumbent and sitting positions. (See Values of Recumbency, Chapter XI, page 102.)
2. Segmental control.
3. Establishment of points of fixation so that the action will be localized to specific muscle groups. (See Establishment of Points of Fixation, Chapter XII, page 110.)

4. Foot Exercises.

   Constant attention must be paid to the correction of the feet. The foot is the foundation of the body architecture. It is futile to attempt to correct the superstructure without first correcting the base. (See Chapter XIII, page 114.)

5. The Pelvic Tilt.

   Emphasis is placed on Abdominal and Lower Back exercises. In all Abdominal and Lower Back exercises care is taken to secure the correct position of the pelvis in order to eliminate the exaggeration of the lumbar curve. (See Chapter VI, pages 60, 61. See Methods, page 206.)

6. Flexibility in Order of exercises.

   The order in which the exercises are presented to the class should be flexible. Teachers should place the emphasis where it is most needed in the particular group.

7. Postural Values.

   Exercises are given to relieve postural strain in relation to joints, muscles, position of organs, and bone growth. ''Correct body alignment'' values are of primary importance. Variety and progression are secondary.

8. Progression.

   There is a slight progression from the first through the sixteenth lesson in all of the schedules. There is also a progression from the Elementary through the High School Schedules. *Great* emphasis, however, has not been placed upon the idea of progression. Emphasis has been placed rather upon:

   a. Securing correct body alignment.
   b. Developing and strengthening muscle groups that need correction.

9. Apparatus.

   The exercises on the apparatus do not advance from simple to complicated bar exercises. Rather the aim in all apparatus work in all schedules and for all ages is to establish certain fundamental principles in correct body alignment by emphasizing and reëmphasizing:

   a. Passive Hanging (Upper Back flat).
   b. Abdominal contraction (flattening) (Eliminate Hollow Back).
   c. Development of Abdominal and Lower Back muscles without overdevelopment of the hip joint flexors. (See Abdominal and Lower Back, Chapter XIII.)

D. Sequence of Schedule of Exercises for Specific Conditions:

Exercises are given for specific conditions in: Recumbent positions, Sitting positions and Miscellaneous (Hanging, Kneeling, etc.). These exercises are based on the principle of the need for segmental control and emphasize correction of the segments involved in the particular defect. The principles involved in exercises are the same as for the exercises in all schedules—with a more definite application to specific conditions.

E. Corrective Exercises with Special Applications:

Exercises are outlined to be applied according to instructions in Schedules.

## II. Fundamental Positions.

A. Recumbency—Backward Lying (Supine) Positions: In all Backward Lying and Hook Lying Positions:

a. If no provision is made for protection of head from the floor and if no hand position is designated, hands may be placed back of the head.

b. If protection from the floor is not needed, hands are at sides unless otherwise designated.

1. Backward Lying Position.

Lying on back with legs fully extended, feet together.

2. Backward Lying, Arms "T."

As 1, Arms side horizontal, elbows bent at right angle, forearm parallel to trunk, palms down, fingers pointing towards feet. (Body with the arms makes letter T.)

NOTES: Arms "T" position furnishes a broad base. The weight of the body fixes the scapulæ. Pulling the elbows upward with the arms in inward rotation activates the rhomboids (scapular adductors) and relaxes the arm adductors and depressors.

3. Backward Lying, Arms Reverse "T."

Arms side horizontal, elbows bent at right angle, forearm parallel to head, palms up, fingers pointing away from feet.

NOTE: Arms Reverse "T" furnishes a broad base. The weight of the body fixes the scapulæ. Pulling the elbows upward with arms in external rotation activates the rhomboids and the external rotators and relaxes the arm adductors and depressors.

4. Backward Lying, Soles of Feet Together.

Lying on back, knees slightly bent and separated, soles of feet together.

NOTE: Position necessitates external rotation of the thighs and inversion of feet.

5. Backward Lying, Knees Separated and Bent to Chest.

Lying on back, knees separated and bent all the way to the chest.

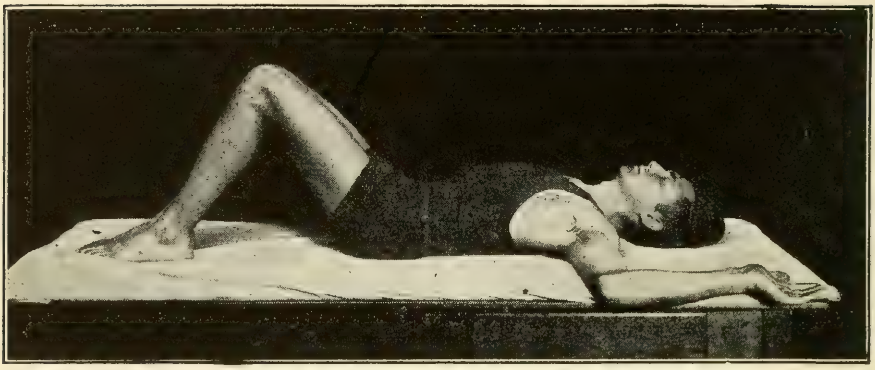

FIGURE 46

Hook Lying—Arms Reverse "T"

6. Hook Lying Position.

Lying on the back with knees bent, feet one to two inches apart, entire sole of foot on the floor, toeing forward.

NOTE: Eliminates tendency to hollow back.

7. Hook Lying Position, Rest.

Lying on the back with knees bent and resting against each other, feet one to two inches apart, entire sole of foot on the floor, toeing forward, body relaxed.

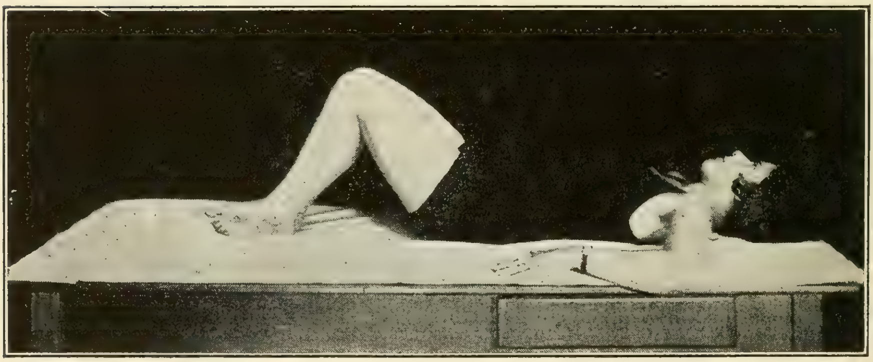

FIGURE 47

**Hook Lying—Soles of Feet Together, Arms "T"**

8. Hook Lying Position, Soles of Feet Together.

As "6," with knees separated and soles of feet together.

NOTE: Position necessitates external rotation of thighs and inversion of feet.

B. Recumbency-Prone Lying (Forward Lying) Positions: In all Prone Lying Positions, if no other hand position is designated, place one hand on top of other and rest face on hands.

1. Prone Lying Position.
   Lying face down on floor or bench, head turned either L. or R., legs fully extended, feet together.

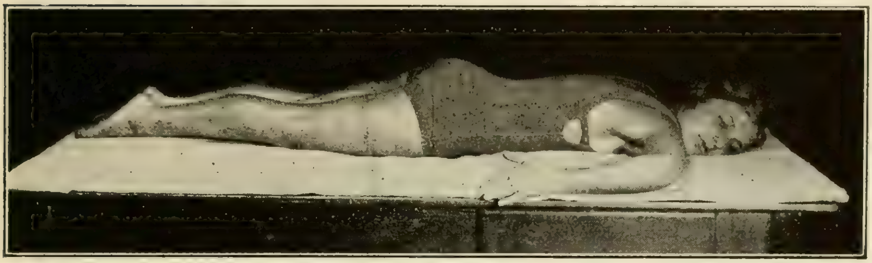

FIGURE 48

Prone Lying—Arms "T"

2. Prone Lying, Arms "T."
   As "B-1," arms side horizontal, elbows bent at right angle, forearm parallel to trunk, palms up, fingers pointing towards feet.
3. Prone Lying, Arms Reverse "T."
   As "B-1," arms side horizontal, elbows bent at a right angle, forearm parallel to head, palms down, fingers pointing away from feet.

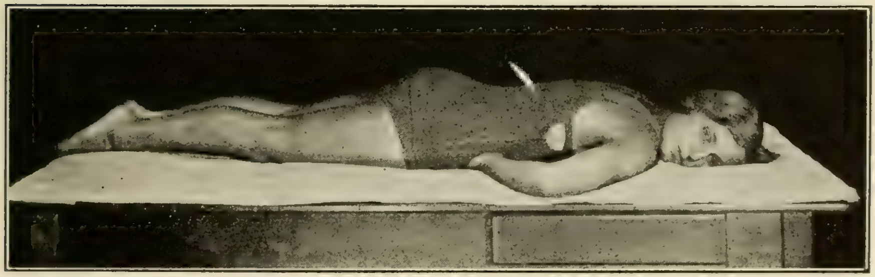

FIGURE 49

Prone Lying—Hands Under Abdomen

4. Prone Lying, Hands under Abdomen.
   As "B-1," hands under upper abdomen, palms up.
   NOTE: Furnishes pressure on abdomen with massaging effect during breathing and exercise. Furnishes means of fixation for the exercise of certain muscle groups.

5. Prone Lying, Fists under Abdomen.
   As "B-1," fists under abdomen, backs of hands on floor. NOTE: Pressure of fist has good effect on intestinal action, similar to that mentioned above.
6. Prone Lying, Feet Apart.
   As "B-1," with legs separated (abducted).
7. Prone Lying Position, Rest.
   As "B-1," face resting on hands, body relaxed.
8. Prone Half Lying Position on Bench, Hips Supported.
   Lying face down on bench, hips supported by bench, legs at right angle to trunk, feet on the floor.
9. Prone Half Reclining Position on High Plinth, Hips Supported, Feet on Floor.
   Lying face down on high plinth, hips supported by plinth, legs at right angle to trunk, feet on the floor.

C. Recumbency-Side Lying Positions: In all side lying positions, if no other hand position is designated, arm fully extended under head, palm up, other arm extended at side.

1. Side Lying Position.
   Lying on either side, arm fully extended under head, palm up, legs fully extended, feet together.
   NOTE: Position gives passive pressure on supporting thigh and pelvis. Especially useful in obesity and constipation.

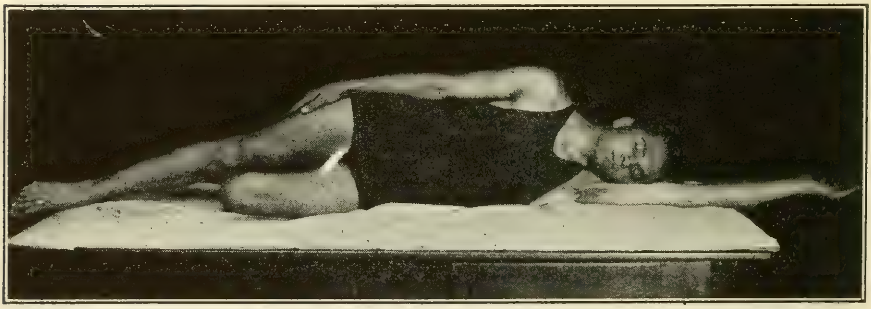

FIGURE 50

Side Lying--Supporting Knee Bent

2. Side Lying Position, Supporting Knee Bent.
   Lying on either side, arm fully extended under head, upper leg fully extended in line with trunk, supporting knee bent at right angle; upper leg crosses supporting leg halfway between knee and ankle.
   NOTE: Furnishes a broad base for exercise; supporting knee bent flattens the lower back.

3. Side Lying Position, Supporting Knee Bent with Hand Support.
   As "1," with free hand on floor in front of body.
   NOTE: Hand Support for stabilization of body.
4. Half Side Lying Position, Supporting Knee Bent with Hand Support.
   Half Side Lying Left (or R.), trunk halfway between lying and sitting, L. hand is placed two feet to side of trunk; L. hand and trunk in line with upper leg; free hand on floor in front of body, upper leg fully extended.

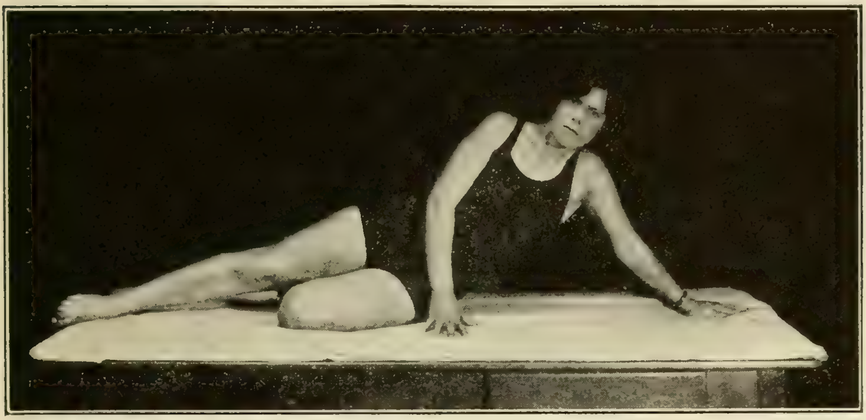

FIGURE 51

Half Side Lying—Supporting Knee Bent—Hand Support

D. Sitting Position: Hands in lap or at sides unless otherwise designated:
   a. Sitting on floor.
      1. Cross Sitting Position.
         Sitting on floor, trunk erect, with legs crossed, tailor fashion.
      2. Cross Sitting Position with Back Support.
         Sitting against wall, trunk erect, with legs crossed, tailor fashion.
      3. Long Sitting Position.
         Sitting on floor, arms at sides, hands on floor, fingers pointing rear, legs extended forward, feet one to two inches apart. Head, shoulders, trunk in correct alignment. Trunk inclined slightly backward at hip joint.
      4. Long Sitting Position with Back Support.
         Sitting against wall, back erect, legs extended forward.

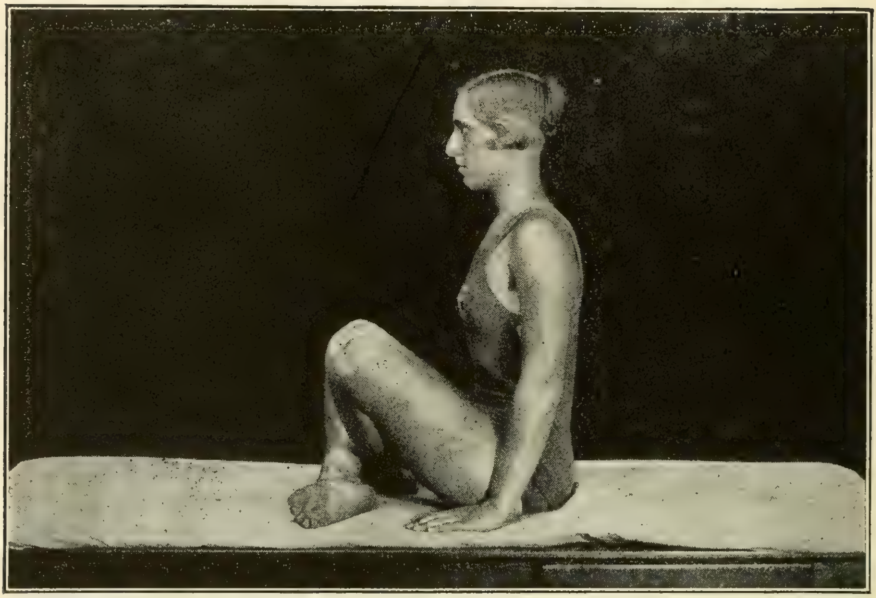

FIGURE 52
Cross Sitting Position

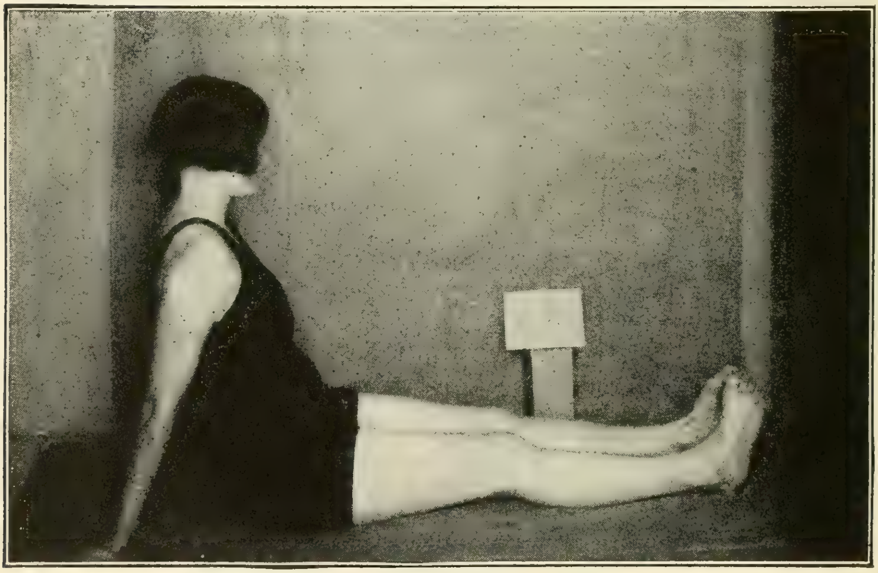

FIGURE 53
Long Sitting Position—Foot Exercise

5. Hook Sitting Position.

   Sitting with arms at sides, hands on floor, fingers pointing rear, knees bent, feet one to two inches apart, entire sole of foot on floor, toeing forward. Head, shoulders and trunk in correct alignment. Trunk inclined slightly backward at the hip joint.

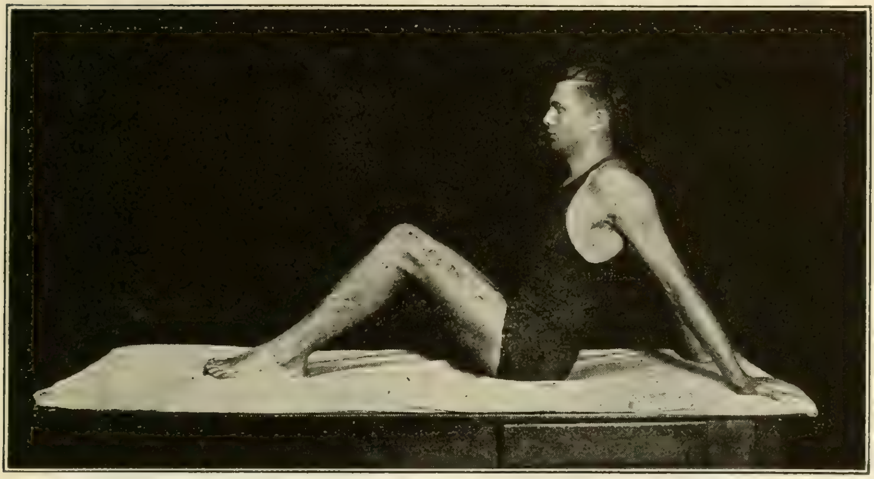

FIGURE 54

Hook Sitting Position

6. Hook Sitting Position, Soles of Feet Together.

   Sitting with arms at sides, hands on floor, fingers pointing rear, soles of feet together, knees apart, head, shoulders and trunk in correct alignment. Trunk inclined slightly backward at the hip joint.

7. Hook Sitting Position with Back Support.

   As "D-5," sitting against wall, hands at sides or in lap. No inclination backward at hip joint. Entire back in contact with wall.

b. Sitting on Bench or on Stool.

   1. Sitting on Bench.

      Sitting, hands at sides, feet together, toeing forward.

   2. Stride, sitting on Bench.

      Sitting, feet apart sideward, one to two feet, toeing forward.

E. Standing Positions: Hands at sides unless otherwise designated

1. Fundamental Standing Position (Attention Position).

   Tall Standing Position, feet one to two inches apart, toeing forward, head pushed up as far as possible, chin in, abdominal muscles contracted, back with normal physiological curves.

2. Rest or Relaxed Standing Position (Stride Stand).
   Standing feet separated one to two feet, toeing forward, weight equally divided, hands clasped behind.
3. Stride Standing Position (Stride Stand).
   Standing feet separated, one to two feet, toeing forward, weight equally divided.

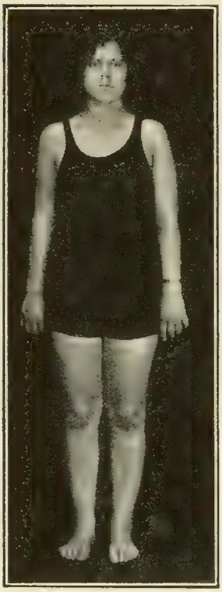

FIGURE 55

Fundamental Standing Position

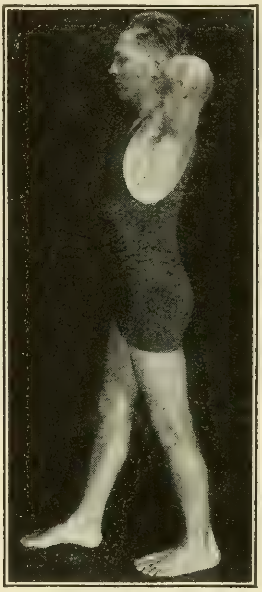

FIGURE 56

Forward Stride Position, Hands on Neck

4. Forward Stride Standing Position (Walk Stand).
   Standing feet apart, one foot forward, one to two feet, toeing forward, weight equally divided.
5. Tall Walk.
   Arms raised overhead, forward upward at an angle of forty-five degrees, feet together, toeing forward. Emphasis placed on pulling abdomen in and flattening back (Thomas and Goldthwait).

   NOTE: Do not bring arms farther back towards vertical because of tendency to cause hollow back.
6. Lean Standing Position, Facing Wall.
   Standing arms' distance away, body inclined slightly forward, back flat, place arms on the wall, shoulder high,

and shoulder width apart, feet toeing forward, elbows slightly bent.

Note: In sustaining body weight in this position "with arms straight," the pectorals are activated, and scapulæ separated. "Elbows bent slightly" overcomes this objection.

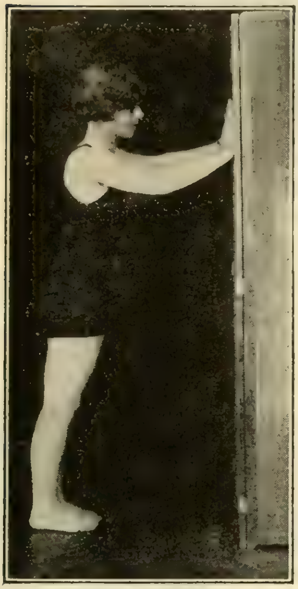

Figure 57

Lean Standing Position Facing Wall—Elbows Slightly Bent

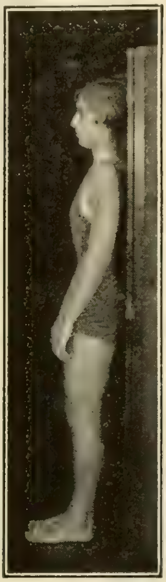

Figure 58

Standing Position — Back to Wall

7. Standing Position, Back to Wall.
   Standing position, heels four inches from wall, buttocks, shoulders and head touching wall, feet toeing forward.

F. Kneeling: Hands at sides unless otherwise designated.

1. Kneeling on both knees.
   Kneel on both knees, ankles extended, toes in.
2. Kneel on one knee.
   Kneeling on either knee. Kneel on R. knee, R. foot resting in inversion, L. knee bent at right angle and straight forward, L. foot toeing in.
3. Kneeling on All Fours.
   Kneeling on hands and knees. Hands are shoulder width or more apart. Head in correct alignment with trunk. Feet resting in inversion.

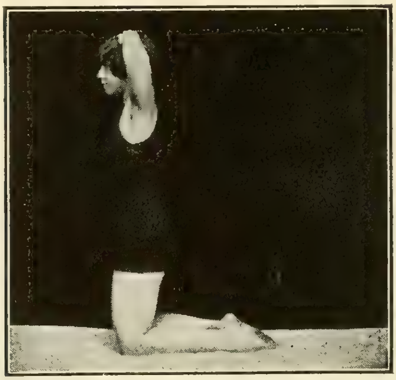

FIGURE 59

Kneeling on Both Knees—Hands on Top of Head

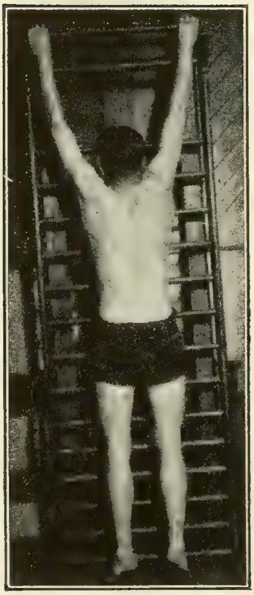

FIGURE 60

Passive Hanging (Posterior View Shown to Demonstrate Effect on Musculature)

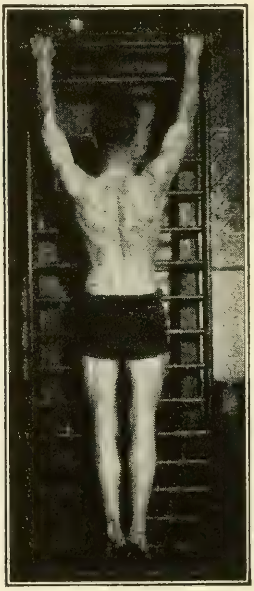

FIGURE 61

Active Hanging—Facing Bars (Posterior View Shown to Demonstrate Effect on Musculature)

G. Hanging:

1. Passive Hanging—Back to Bars.

   Hang, wide grasp, hands separated about three feet on the bar. Let the body weight hang passively on arms.

   NOTE: a. Hands as far apart as possible to secure passive stretching of the shoulder girdle depressors and arm adductors.

   b. In all group work, Passive Hanging Back to Bars is recommended as the best method.

   1. To eliminate the tendency to get a "Pull up" stimulus activating the pectorals.
   2. To lessen the tendency to hollow back.

2. Passive Hanging, Facing Bars.

   As "1," except face bars. Be sure to emphasize wide grasp.

   NOTE: Passive Hanging Facing Bars applicable in individual cases. May be used in group work if class is small enough to allow correction and supervision of individual students.

3. Active Hanging, Back to bars (Cut is given facing bars only to illustrate Active Back and Shoulder muscles).

   Hang, wide grasp, hands separated about three feet, hold the body weight on the arms by actively contracting the back muscles.

   NOTE: To activate the scapular adductors (Rhomboids and Trapezius). As arm adductors act also as scapular adductors, it is best to dissociate the synergistic action of these groups: that is, it is essential to obtain scapular adduction while the arm is fixed in abduction. Hanging back to bars activates the posterior fixators of shoulder girdle, correspondingly decreasing tension of pectorals.

4. Side Hang Stand Position.

   Side Hang Stand—Either side to bar—R. side to bar, R. hand grasp bar low, L. hand grasp bar high; feet at least a foot and a half from bar, feet together and toeing forward.

   NOTE: Trunk fixation laterally secured by hand grasp.

5. Prone Falling Position on Desk or Benches. See Fig. 62, p. 198.

   Body in prone fall position—body in straight line, weight supported by hands and feet. Hands may be placed on desk or benches. Prone fall on floor may be used when abdominal muscles are strong enough to hold the body in a straight line.

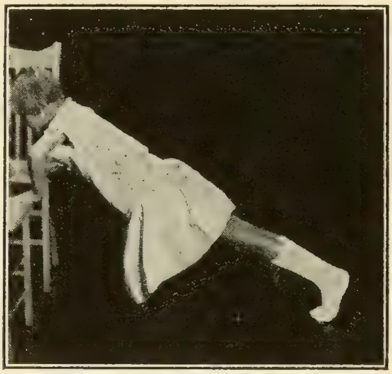

FIGURE 62

Prone Fall Position on Desk or Bench

## III. Gymnastic Positions.

The Gymnastic Positions following may be used for Exercises, or they may be used as Starting Positions for exercises in Recumbency, Sitting and Standing Positions. A few of the simple fundamental positions are given with explanation. Not all that appear in the schedules are given. The attempt has been made to describe a sufficient number, so that all others may be interpreted from the ones described.

A. Foot Positions.

1. Toeing forward:
   Feet are parallel one to two inches apart.
2. Toeing in:
   Heels are one to two inches apart, toes in as in "pigeon toe" position.

B. Leg Positions:

1. Leg forward:
   The leg, R. or L., is raised forward as far as possible. Pelvis, trunk and head should be kept in correct alignment with stationary leg.
2. Leg backward:
   The leg, R. or L., is raised backward as far as possible. Pelvis, trunk and head should be kept in correct alignment with stationary leg.
3. Leg sideward:
   The leg, R. or L., is raised sideward as far as possible. Pelvis, trunk and head should be kept in correct alignment with stationary leg.

C. Trunk Positions.

1. Forward bending:
    - a. Bend 45 degrees.
      Trunk is bent forward to a 45 degree angle at the hip joint. Head in correct alignment with trunk
    - b. Bend 45 degrees, board on head.
      Trunk is bent forward to a 45 degree angle at the hip joint with book or board on head.
2. Forward downward bending.
    - a. Touching hands to floor.
      Trunk is bent forward as far as possible, touching hands to floor.
    - b. Forward downward beyond 45 degree angle, back flat.
      Trunk is bent forward as far as possible at the hip joint. Keep back flat.
3. Sideward bending:
   Trunk is bent sideward, R. or L., at waist line. Keep head in correct alignment with trunk, bending wholly in the lateral plane directly sideward, not forward.
4. Twisting sideward:
    - a. Twisting sideward, pelvis fixed.
      Trunk is twisted sideward, R. or L., at waist line. Keep head in correct alignment with trunk. Keep pelvis firm. Hips remain stationary. Action is limited to the waist muscles.
    - b. Twisting sideward, trunk and leg muscles included.
      Trunk, hips and legs are twisted sideward, R. or L. Keep head in correct alignment with the trunk. The entire body is involved in this movement. Exercise used for Big Muscle activity.

D. Hand and Arm Positions.

1. Hands on Hips:
   Hands are placed on the hips, thumbs to the rear, wrists straight. Elbows are in line with the body.
2. Hands on Neck:
   Hands are placed on the neck, finger-tips touching, wrists flat, elbows well back. Chin in, neck back.
3. Arms Side Horizontal:
   Arms are raised sideward to horizontal position. Arms shoulder high, completely extended with palms down.
4. Arms Side Horizontal—Palms Up:
   Arms are raised sideward to horizontal position. Arms shoulder high, completely extended, with palms up.
5. Hands on Head:
   Hands are placed on top of head, finger-tips touching, wrists flat, elbows well back.

6. Hands on Forehead:
   Hands are placed on the forehead, palms on head, or facing outward, finger-tips touching, wrists flat, elbows well back.
7. Arms folded above Head:
   Forearms are placed on top of the head, hands at elbows, elbows well back.
8. Hands on Abdomen:
   Hands are placed on upper abdomen, one hand on top of the other.
9. Arms folded on Abdomen:
   Forearms are placed on upper abdomen, hands at elbows.
10. Arms Bend:
    Arms bent, hands at shoulder (hands may be open or closed), elbows close to the sides. The forearm should be bent on the upper arm. The hands should be directly in line with the shoulders.
11. Arms Forward Bend:
    Arms bent, thumbs in contact with the chest, palms down. Elbows on level with shoulders. The forearm is bent on the upper arm. The upper arm is held shoulder high. Hands should not touch in front.

    NOTE: Upper back should be kept flat in this position. The rhomboids should be strongly activated.
12. Hands clasped in rear:
    Hands are clasped in rear of thighs, front of hands together, fingers interlocked, arms relaxed.
13. Arms, diagonal:
    Arms sideward upward over head, half way between side horizontal and vertical, palms in.
14. Tall Walk:
    See Standing Position "Tall Walk," page 194.
15. Arms to Vertical:
    Arms are raised to vertical position over head, palms in. Arms are completely extended.

    NOTE: Used in Sitting or Backward Lying positions on account of the tendency to exaggerate Hollow Back.
16. Arms "T":
    Arms are side horizontal, elbows bent at right angle, forearm parallel to trunk, thumbs toward body.
17. Arms Reverse "T":
    Arms are side horizontal, elbows bent at right angle, forearm parallel to head, palms forward, thumbs toward body.

E. Head Positions.

1. Turkey Gobbler Position:
   Drop chin forward in an awkward position. In returning draw the chin in, neck back, push up on the head.
2. Head Forward:
   Let head fall forward in an easy relaxed position.
3. Head Backward (Backward Moving of Head):
   Head is drawn backward strongly, chin in, neck back.
4. Head Bending Sideward:
   Bend head sideward, R. or L. Try to touch ear to shoulder.
5. Head Twisting Sideward:
   Twist head sideward, R. or L. Attempt to bring the chin in line with the shoulder, neck back.

F. Lunges.

1. Forward R. or L.:
   Place R. foot forward (forward stride), bend R. knee, trunk erect. Head in correct alignment with trunk. Feet toeing forward.
2. Sideward R. or L.:
   Place R. foot sideward (stride position), bend R. knee, trunk erect. Head in correct alignment with trunk. Feet toeing forward.
3. Backward R. or L.:
   Place R. foot backward. Bend R. knee, trunk erect. Head in correct alignment with trunk. Feet toeing forward.

G. Charge.

1. Forward R. or L.:
   Place R. foot forward (forward stride), bend R. knee. Incline trunk over the bent knee. Head, trunk, hips, rear leg in straight line. Feet toeing forward.
2. Obliquely Backward, R. or L.:
   Place R. foot obliquely backward, bend R. knee. Incline trunk over the bent knee. Head, trunk, hip, front leg in straight line.

**IV. Breathing Exercises. See Correct Breathing, Chapter XII, pages 107-109.)**

A. Starting Positions:

1. Recumbent Positions:
   Breathing exercises are recommended frequently in Backward Lying positions with scapular fixation. Students are inclined in the execution of breathing exercises to "breathe deeply" and to raise the shoulders and scapulæ

with each breath. Fixation of the scapulæ eliminates this common error of faulty breathers.

2. Sitting Positions:

   Breathing exercises are recommended in "Sitting positions."

   a. In progression from "Lying positions."
   b. To teach correct breathing in a Sitting position.

3 Standing Positions:

   Breathing exercises are recommended in "Standing position."

   a. In progression from "Lying and Sitting positions."
   b. To teach correct breathing in Standing position.

B. Sequence of "Breathing Exercises" in Schedules:

Breathing exercises follow the abdominal exercises or Big Muscle activity, because of the physiological need for breathing after the exercise of Big Muscle groups. Breathing exercises are given at the end of the lesson for the same reason. (See Correct Breathing, page 107.)

C. Types of Breathing Exercises:

Simple movements are given in connection with breathing exercises to insure natural breathing with the correct use of the diaphragm.

1. The "smelling of the flower" simile as recommended by Dr. Noble, of Boston, Mass., is used frequently because it has been found to be of practical value in bringing about natural breathing with correct use of the diaphragm. Getting the student to center his attention on smelling a flower, if done correctly (directions should be given: to breathe in *exactly* as if smelling delicate perfume of a rose), will minimize the tendency to take a deep breath and will tend to minimize the faults that usually accompany breathing exercises as:
   a. Raising the shoulders.
   b. Exaggerated chest expansion.
   c. Strong contraction of upper abdominal muscles.
   e. Hollow back.
2. The exhaling "through a straw" simile is used to secure a controlled exhalation to avoid explosive "letting out" of the air. Whistling on the exhalation may be used for the same purpose.
3. The arm movements used with breathing exercises are:
   a. Turn palms outward.
   b. Raise arms side horizontal.

   Complicated and varied arm and trunk movements are not recommended. The effort is made in all breathing exercises to minimize the tendency to faults listed under

"1," and to secure natural breathing with the correct use of the diaphragm.

4. Breathing Exercises "On Command" only:

Breathing exercises are given "On Command" only. Breathing exercises as rhythmical movements are not indicated. Breathing exercises in a "definite rhythm," established by the teacher, produce unnatural breathing. Effort should be made always to encourage breathing in accordance with the natural rhythm of the individuals involved.

## V. Nomenclature.

A. Description of Exercises.

1. The segments of the body to be exercised are designated as: Head, Upper Back, Feet, Big Muscle Group, etc.
2. Starting position for the exercise is indicated as: Backward Lying, Standing, or Sitting Position.
3. Statement of exercise:
   - a. Preparatory command with words of warning and care in execution.
   - b. Numeral for command of execution.
   - c. Note giving special warning, value, reason for exercise, muscle groups involved, special benefit derived, etc.

B. Terminology.

1. Statement of exercises:

All exercises have been stated as clearly and as concisely as possible to convey the meaning desired. No one system of nomenclature has been adhered to. No attempt was made to use terms and expressions that are familiar to large numbers of students and teachers. The general aim has been to state the exercise in such a way that if the terms used are not familiar to the students and teachers of physical education they may be easily interpreted and understood by a great majority. All exercises are presented with the thought that teachers may use, if they wish, the description and commands as stated for class work. The main aim, however, was to state the exercises so simply that the teachers could grasp the meaning easily and translate the exercise in their own terminology. Some of the traditional exercises that are used with small changes will be familiar to large numbers of teachers. Other exercises that are used primarily for the purpose of localization of certain muscle groups essential in securing segmental control require their own individual terminology. To assist in the interpretation of these exercises see "Explanation of Terms," page 206.

2. Numeral Used for "Commands of Execution."

In the description of the exercises, a uniform method of stating the "Command of Execution" is used: Numerals are indicated in each case as "Commands of Execution." This is not to be interpreted as a recommendation to teachers that numerals are to be used exclusively as commands of execution in the presentation of their work to the class.

a. The recommendation is made to teachers that a variety of expressions be used in the presentation of formal class work.[1]

b. Words indicating the position to be assumed may be used as "Command of Execution" as "Curl," "Touch," "Bend," etc. (See Exercises with Special Commands, Chapter XXVIII.)

The numerals are used exclusively in schedules presented for the sake of convenience, uniformity and ease in interpretation.

3. "Preparatory or Explanatory Commands."

In the description of the exercises *no* attempt has been made to use a uniform method in the statement of the "Preparatory or Explanatory Command." To avoid the monotony that would result if one type of expression were used exclusively different methods of stating the "Preparatory or Explanatory Command" are made use of:

a. Imperative Verb as "Place," "Bend," etc.

b. Present Participle as "Arm Bending and Stretching."

c. Combination of Imperative Verb, stated or understood, and a phrase "Hands on Neck with foot placing sideward."

d. Name of the part of the body indicated, in familiar exercise with the Imperative Verb understood, as "Arms side horizontal."

e. Combination of any of the above:

The emphasis in the description of the Explanatory Command has been placed on using words that tend to bring about the localization of muscle groups designated for that particular part of the exercise. A strict adherence to the same type of expression for each part of the exercise has *not* been possible. The Imperative Verb is *not* used exclusively as the Preparatory Command for the Command of Execution, "One!"; the Present Participle is *not* used in each instance for "Two!" Either method of expression may be used for either "One!" or "Two!"; "Place hands on neck—One!" or "Placing hands on neck—One!" may be used.

4. Uniform Meaning and Expression—Preparatory Command for "Three" and "Four."

a. "Return" is used in all exercises for the Preparatory

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[1] See "Gymnastic Teaching," Skarstrom, p. 45, "Technique in Use of Signals."

Command for the numeral "Three" and indicates the return from the position assumed on "Two." The term "Return" is given this uniform meaning throughout the schedules for convenience and ease in interpreting the exercises.

b. "Position" is used in all exercises for the Preparatory Command for the numeral "Four" and indicates the return to the starting position indicated for that exercise.

c. "Relax" is substituted occasionally for "Return" or for "Position" or for both. When a formal return to the starting position is not desired the word "Relax" is used to indicate an informal return (exact meaning determined by the specific exercise in which it is used).

5. Progression from one exercise to another within the lesson.

Directions are not given to the teacher in the lessons to take the class from one starting position to another for the various exercises. The suggestion is made that the change from "Lying" to "Sitting" or from "Sitting" to "Standing Positions" be made as informally and with as few words of command as possible. The various starting and fundamental positions should be studied by the teacher and taught to the class. When the different starting positions have become familiar to the class, the statement by the teacher of the starting position to be assumed should be sufficient to place the class in the desired position.

6. Presentation of Exercises "On Command" and "In Rhythm."

a. "On Command":

The exercises as described in the lessons are presented "On Command" for one round. In the presentation of corrective exercises to groups it is assumed that the exercises, when presented formally, should be presented "On Command" so that the exercise may be definitely analyzed and points checked by the teacher. The presentation of the exercise "On Command" gives the teacher an opportunity to:

1. Teach the exercise.
2. Correct positions.
3. Demonstrate correct position.
4. Call attention to obvious errors in execution.
5. Call attention to exaggerated positions.

b. "In Rhythm":

The exercises should be started rhythmically when in the opinion of the teacher the group is familiar with the exercise and can execute the rhythmical movement in good form. Additional instructions are given in the

Introductory Notes of the Schedules of Exercises as to the presentation of the exercises "On Command" and "In Rhythm" for that series.

c. Special "Rhythms" for certain exercises are recommended. (See Exercises, Special Rhythm, Chapter XXVIII.)

7. Breathing Exericses "On Command" only.

Breathing exercises are given "On Command" only. (See page 203.)

8. Number of Repetitions.

The number of repetitions of each exercise is left largely to the judgment of each teacher. Additional recommendations are given in the Introductory Notes of each series of schedules.

9. Class Organization.

Suggestions for Class Organization are given in the Introductory Notes of each series of schedules.

## VI. Explanation of Terms.

A. Grip the Buttocks:

The term is used to emphasize the contracting and tensing of the gluteal muscles. Pinching or gripping the buttocks together gives a concrete means of emphasizing a strong contraction of the gluteals and external thigh rotators. The tightening of the gluteals is used to assist in correcting the tilt of the pelvis.

B. Correct the Pelvic Tilt:

The term is used to adjust an exaggerated tilt of the pelvis characteristic of hollow back. Care should be taken in correcting exaggerated anteroposterior tilts to develop the abdominal muscles and to tip the pelvis up in front and down in back. For correct angle of inclination: (See Pelvis, Chapter VI, pages 60, 61.)

C. Abdominal Contraction or Flattening:

Abdominal contraction or flattening is applied to localized contraction of the lower abdominal muscles especially. Care should be taken to associate the use of this term with flattening the lower back and with correcting the tilt of the pelvis.

Do not tense or contract the upper abdominals. Holding the upper abdominals tense causes chest fixation, decreasing the expansion, and does not sufficiently localize the control of lower back and pelvic segments.

D. Flatten the Back:

The term applies especially to flattening the lumbar curve of the spine. Also used to secure a correct alignment of all of the physiological curves of the spine. Associated with abdominal contraction and correction of the pelvic tilt. (See Chapter XIII, page 115.)

E. Thigh Rotation Outward:

The term is applied to external rotation of the leg in its long axis by means of its external rotators (pyriformis, gemelli obturators and quadratus femoris). The action accomplishes the realignment of the legs (bones and joints). The force is applied to the long axis of the bones of the leg and is transmitted by means of the tightly mortised grip of the tibia and fibula on the astragalus, influencing the relation of the leg to the foot. (See External Thigh Rotation, Chapter XIII, page 114.)

F. Spinal Push Up:

The term refers to "stretching the spine" in an effort to improve the body alignment, by pushing up the head strongly. The chin is in. The neck is pushed back against the collar. The "spinal push up" if executed correctly brings about the correct alignment of head, trunk and hips. Action may be improved by directing the individual or class to "stretch as tall as possible." (See Posture Cues, Chapter XIX, pages 210, 211.)

G. Pinch the Shoulder Blades Together:

The term refers to contraction of the adductors of the scapulæ. In executing the exercise the shoulders must not be raised or pushed back. The action should be limited to the Rhomboids and Lower Trapezius. (See Chapter XII, page 111.)

To illustrate and demonstrate (*not* as an exercise) have one student exaggerate the forward drooping of the shoulders, increasing the space between the shoulder blades as much as possible. Then flatten the upper back and draw the shoulder blades together and hold. (If possible have demonstration with back bare so that students may see the distance between the scapulæ decreasing as the shoulder blades come closer together by the action of the shoulder blade adductors. (See Chapter XII, page 110.)

H. Bend Knees, Touch Feet to Buttocks:

In Prone Lying Position the knees are bent, the feet and legs are pressed to the buttocks with the hands.

The exercise is recommended to stretch the psoas magnus. The pelvis must be fixed and abdominal muscles contracted in order to establish a point of fixation, to insure stretching. There may be a tendency to increase a hollow back. This must be overcome by tensing the abdominals and making an effort to hump the back. When possible use a pillow under the abdomen.

I. Hump Up the Lower Back:
   1. In the Prone Lying Position the attempt is made to flatten the lumbar curve by humping up the lower back. Humping up the back shortens the abdominals while the thigh flexors are slackened.
   2. Kneeling on All Fours hump up the back as in "1." Kneeling position fixes the shoulder girdle and the pelvis.

## VII. Psychological Application of Exercises.

A word of caution should be given all teachers in the application of certain exercises. The method of approach in the application of corrective exercises must be scientific and sincere in purpose on the part of both teacher and class. The authors present the exercises realizing very definitely that even placing some classes in a Backward Lying Position may cause a violent explosion of mirth. Certain exercises must be used at the discretion of the teacher. The movements "grip the buttocks," "hump up the lower back," may seem to provoke undesirable emotional reactions. These difficulties are subject to the control the teacher has over the class and the confidence the class has in the teacher and need never appear as problems if class organization is sound and if the relation of teacher and pupils is wholesome. They can be avoided entirely if the purpose of the exercises is clear in the minds of the teacher and pupils. The approach to the question must be scientifically evident.

The exercises are presented as illustrating certain fundamental principles. In applying these fundamental principles the authors urge teachers to keep in mind at all times adjustments that should be made to meet individual needs, not only as to physiological types, but the needs as represented by varied abilities, backgrounds and dispositions to be found in any one group.

# CHAPTER XIX

## Methods: Group and Individual
## All Schedules

### SPECIFIC METHODS—ALL SCHEDULES

A. Influence of Environment:

In the organization of corrective classes the influence of environment should be considered.

1. Attractive, clean, light, well ventilated room.
2. Use of canvas or mats for exercises in recumbent position.
3. Protection from the floor by use of head boards.

B. Starting Positions:

In the presentation of exercises to classes and to individuals care should be taken in starting the exercise from the most advantageous "Starting Position." Consider both the needs (type, ability, etc.) of the individual who is taking the exercise and the purpose for which the exercise is given. In order that the Fundamental Starting Positions for all exercises may be clearly understood, they are described, explained and illustrated in Fundamental and Gymnastic Positions, Chapter XVIII, page 187.

C. Body Alignment:

In the presentation of all exercises correct body alignment should receive primary consideration. Careful thought should be given to the gravity lines of the body. (See Gravity Lines, Chapter III, page 31.)

D. Type Considerations:

In the presentation of all exercises consideration should be given to body type. (See Type Consideration, Chapter IV, page 38.) For the lithe type, exercises should be adapted as to starting position. The number of times the exercises are to be executed should be limited and the tempo should be restricted, etc. For the stout type, exercises should be adapted as to the starting position. The student should be stimulated to exercise to the limit of his strength and endurance and the tempo should be speeded up. (Stout type cases in which endocrine or heart disturbances are the cause of overweight are exceptions.)

E. Posture Cues:

In presentation of all exercises special attention should be given to posture cues.

Posture cues for all class, group and individual work. (See Gravity Line, Chapter III, page 31.)

1. Head up, push head up, stretch as tall as possible.
2. Chin in.
3. Neck back—make the back of the neck touch the collar, if there is a collar, if not make it touch an imaginary collar.

   NOTE: "Neck Back" seems an ambiguous term, as only the back of the neck is referred to as indicated in explanatory notes. However, the expression "Neck Back" brings the desired result of getting the head in correct alignment with the trunk and hips —the head back with chin in.
4. "Abdomen flat." (Caution against pulling up diaphragm with chest raising.)
5. Back straight, flatten lower back.
6. Shoulders relaxed.
7. Feet toeing forward, weight on outer border, one to two inches apart.

F. Warning as to the Use of Posture Cues:

The ordinary command of "head up," "chest out," "shoulders back," should be eliminated and, in place of it, such expressions as "head up," "chin in," "back straight," "abdomen flat," should be given. The command of "chest out" and "shoulders back" is not physiologically accurate in that it centers the attention in the wrong place. The important thing to be remembered is that the back is the part to be influenced in obtaining a good posture. The order "chest up" and "shoulders back" raises the rib cage, pulls on the shortened pectoral muscles and increases the hollow back in a very high percentage of cases; whereas, chin in, with spinal push up, is a better expression. The spinal muscles are immediately stimulated and the straightening of the spine pulls on the cervical fascia, which is a suspensory attachment connecting the viscera to the bony framework and obtains the improvement in position and alignment desired.

G. Posture Suggestion for All Class, Group and Individual Work.

Emphasize:

1. Spinal push up. Push head up, neck back, chin in. (See Chapter XVIII, page 207.)
2. In all head exercises care should be taken in backward bending or moving of head to pull the chin in to secure improved head and chest alignment.
3. Develop low back and abdominal muscles. Try to get localized action of abdominal and gluteal muscle groups. (See Chapter XIII, pages 115, 116.)
4. In all leg raising (knees separated) have the student count aloud or give his own command or exhale audibly to expel

air from abdominal cavity to prevent abdominal strain. (See Chapter XIII, page 118.)

5. In round hollow back.
   - a. Emphasize correct alignment of head, shoulder girdle and pelvis. (See Gravity Lines, Chapter III, page 31.)
   - b. Flatten lower back.
   - c. Correct the tilt of the pelvis.
   - d. Emphasize external thigh rotation.
6. Correct foot position. Toeing forward, weight on outer border of foot. Feet one to two inches apart.

II. Negative Indications for All Class, Group and Individual Work.

1. In correcting general posture do not urge "shoulder back" and "chest high" (tends to increase hollow back and general tightening of upper abdominal muscles.)
2. In teaching correct standing position do not teach weight forward on the balls of feet. (See Gravity Lines, Chapter III, page 31.)
3. In teaching the correct position of the foot in walking do not teach that the ball of the foot should come down first. The heel of the foot should strike the floor first—heel first, very lightly on outer border of foot, arch second, toes third. The interval of time required for the segments of the foot to touch the floor should be so slight that the entire surface of the foot may seem to be in contact at the same time. (See Foot, Chapter VIII, pages 69, 70.)
4. In teaching the correct position of the feet in walking do not teach exaggerated ankle extension. Exaggerated ankle extension increases the tendency to weaken the arch developing the extensors of the ankle (gastrocnemius), frequently over developed in weak feet, and by stretching the flexors and invertors of the ankle which should be shortened.
5. Do not rise on toes if you wish to strengthen the arch. Rising on toes tends to shorten the calf muscles, frequently already too short in weak arches. Rising on toes tends to accentuate ankle pronation unless prevented by straight foot or "toe in" position. The weight of the body in exercising a weak foot should be placed on the heel, entire outer border of the foot and the metatarsal heads. Flexors of the ankle should be strengthened. To prevent the pronation of the ankle that results when the weight of the body is placed practically all on the big toe joint as in "out toe" position, inversion and flexion of the ankle are recommended in a sitting position in preference to "heel raising" or "rising on toes." (See Chapter XIII, page 114.) (See Chapter VIII, page 69.) (See note, page 74.)

6. Eliminate lunges with feet turned out and with stamping. ‘‘Toeing out’’ with stamping in a lunge is strongly conducive to ankle pronation and flat feet. (See Chapter XIII, page 117.)
7. Eliminate deep knee bends. Putting the entire body weight on the knee frequently is conducive to irritation of joint linings and general joint derangement. (See Chapter XIII, page 116.)
8. Eliminate trunk bending backward. Trunk bending backward exaggerates hollow back. (See Chapter XIII, page 117.)
9. Do not give ‘‘leg raising’’ or ‘‘sit up’’ exercises in round hollow or hollow back in an attempt to correct them by improving abdominals because of the greater tendency of ‘‘leg raising’’ and ‘‘sit up’’ exercises to further develop the thigh flexors. (See Chapter XIII, page 115.)
10. In general relaxed posture with round shoulders, do not give exercises to stretch the rhomboids as ‘‘trunk forward downward bending.’’ Concentrate on exercises that will contract the rhomboids and stretch the shortened pectorals and at the same time flatten the lower back. (See Chapter XIII, page 117.)
11. Do not continue in group work with any class to give exercises in a standing position if correct foot and back positions cannot be maintained. (1. Reclassify group, taking out students with poor muscle tone. 2. Give entire group exercises in recumbent and sitting positions.)

### I. Methods of Stimulating Good Posture.

1. Grading of Students:

Classification and grading the students in Posture at the first of each semester stimulates the interest in Good Posture throughout the semester. Posture may be graded as follows:

| | | |
|---|---|---|
| 1 or A | Excellent | alignment of the segments of the body |
| 2 or B | Good | “ “ “ “ “ “ “ |
| 3 or C | Poor | “ “ “ “ “ “ “ |
| 4 or D | Very Poor | “ “ “ “ “ “ “ |

Various stunts and methods may be used to stimulate better posture. (See Chapter XXXI, page 482.) A very simple one is to have all 1 or A Posture Students in the class wear ties a certain way or wear a small insignia on their ties, or some inexpensive mark of identification, as a button, to be retained only as long as Good Posture is maintained.

2. Bancroft’s Triple Posture Test with Presentation of Grade A Posture Tag for Those Who Pass All Tests.

The Triple Posture Test as described below should be given as a class exercise twice a month for a period of three months. At the end of that period, at a stated time, the test is given in the form of a contest. The boys and girls who pass all three tests are presented with a ‘‘Grade A’’ Posture Tag.

Thousands of small paper tags with "——— City Schools, Grade A" can be printed at a nominal fee. This contest may be made a feature or follow up of Good Posture Week. (See Posture Week, Chapter XXXI, page 477.)

## TRIPLE POSTURE TEST

1. Purpose: To determine "Good Posture" or "Grade A" Posture boys and girls in each group.
2. Test may be given in Physical Training period on the grounds or as relief period or rainy day work in the schoolroom.
3. *On the Playground—Physical Education Period.*
    A. *Standing Test*—Examine the class front and side view; group in Squad formation. Check on two positions: (1) "In Place—Rest" (hands behind, feet sideward, toe straight ahead, weight on outer border). (2) "Attention."

    *Exclude* for the following errors in "Rest" and "Attention" positions:
    1. Feet *not* toeing straight ahead.
    2. Weight not held on outer border of feet.
    3. Weight on one foot more than another.
    4. Relaxed or hyper-extended knees.
    5. Protruding abdomen.
    6. Hollow back.
    7. Round back—flat chest.
    8. Forward head.
    9. Head tilted.
    10. Marked difference in shoulder height.
    11. Hands not in position.
        a. "In Place—Rest" (hands clasped behind).
        b. "Attention!" (hands should hang naturally and easily at sides, not in front, not in back, not too stiff).

    Those who have passed "Correct Rest"—"Attention" position take next test.

    B. *Marching Test*—March steps, forward, backward or sideward. Single file marching around room or area designated as room. Marching by twos; marching by fours. Column left "by twos," Column left "by fours." Any marching that has been covered in previous Physical Education periods.

    Exclude for:
    1. Relaxed position.
    2. Out of rhythm.
    3. Out of step.

    Those who pass "Marching Test" take "Exercise Test."

C. *Exercise Test*—Fundamental positions and exercises as:
  1. Hands on neck—*Place.*
  2. Arms—*Bend.*
  3. Arm bending and stretching sideward with foot placing sideward and heel raising.
  4. Sideward—Lunges, trunk bending forward and sideward, etc.

  Special suggestion for 1st and 2nd grades. Big Muscle movements *only* and informally. Arm sideward, side horizontal, *stretch* as far as possible; trunk bendings; knee bendings; jumping.

  *Exclude* for:
    1. 1-11 under A.
    2. Incorrect exercise positions (as in arm bend—if hands are placed in front of chest instead of definitely at shoulder).
    3. Relaxed positions.

All those who pass the three tests receive "Grade A."

4. *In the School Room—Relief Period or Rainy Day.*

A. *Sitting Test*—Correct Sitting Position. *Exclude* for the following:
  1. Feet not toeing straight ahead.
  2. Knees *not* bent at right angles.
  3. Round back, flat chest.
  4. Forward head.
  5. Head tilted.
  6. Relaxed position.
  7. Lower end of spine pushed forward. Slumping.
  8. Body bent forward at waist—*not* at hips.
  9. Incorrect position of hands.

# CHAPTER XX

## METHODS: REGULAR AND RESTRICTED (FORMAL) CLASSWORK FOR HIGH SCHOOL, JUNIOR HIGH SCHOOL AND ELEMENTARY SCHOOL

### Technique in Teaching Large Groups

A. Description of Exercise.

1. The exercises are described to serve the teacher's need in presenting the work to the class if he so desires. They are described in all of the schedules in such a way that the teacher may use the terminology presented for both formal and informal presentation of classwork. Helps for each series of exercises are given in introductory notes of same.
2. To stress the value of the exercise:

   The attempt is made in the description of the exercises to make the teacher think in terms of the value of the exercise to the student, rather than forcing the exercise on the group because it appears in the lesson plan for that class on that day.

B. Presentation of Exercises.

1. Why exercises are presented "On Command":

   The recommendation is made that the exercises be presented formally to large groups at least one round "On Command." The reasons for this are:

   a. To teach the exercises—to explain value of exercises: as class holds the position—taken in response to "command" —time is allowed before another command is given, or before the return command for a brief explanation of the value of the exercise, for caution and warning as to the correct execution.

   b. Gives opportunity to correct position—as the class holds the position in response to command, teacher has an opportunity to correct position by:

      1. Demonstration of correct position (by self or student).
      2. Manual correction of student.
      3. By verbal correction and warnings to call attention to obvious errors in execution.
      4. By cues to stimulate improved positions.
      5. By calling attention to exaggerated positions.

2. Warning—Not too many rounds "On Command":

   Do not kill the interest in the exercise by repeating the exercise "On Command" for more than one or two rounds.

and by holding tiresome positions for long periods of time. This type of presentation is monotonous and tiresome. The teacher is apt to lose control of the class. If the class cannot understand and comprehend the exercise, clarify by individual demonstration or change to a simpler one. The new exercise presented should be one that the class can easily understand and execute properly. The new exercise should give fundamental training in preparation for the more difficult exercise.

3. Use of the "Cue" method:

   The use of Doctor Skarstrom's[1] "Cue" method is recommended for the formal presentation of exercises to large groups, both "On Command" and in "Rhythm." The "Cue," an indication of the position to be assumed, should be given by the teacher during the preparatory command—the preparatory command to be followed by a long pause. The pause should give time for the verbal preparatory command and the cue, a quick demonstration of the position, to register in the minds of the class. The teacher should resume the "Fundamental standing position" before giving the command of execution. Definite, clean-cut positions in well chosen exercises indicate positive corrective values. The use of the "cue" method is recommended as an aid in obtaining better positions.

   a. To be sure that the members of the class have the knowledge of the correct positions before asking them to assume the positions.
   b. To stimulate interest and attention.
   c. To give the class all the help possible in assuming correct positions by executing the "cue" with nicety of form and with a great deal of force.
   d. To give the teacher an opportunity when the command of execution is given to be free to walk around the class to correct positions, and to stimulate the exercises.

4. Use of the Pause:
   a. To use a long enough pause so that the ideas presented by the preparatory command and the cue may be clearly registered and definitely lodged in the minds of the students.
   b. To use a long enough pause to insure a snappy and uniform group response.
   c. Not to make the pause too long so that the class has time to forget the exercise presented.

5. Numerals Used as Commands of Execution:
   a. Numerals are used in the *description* of the exercises for

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[1] See "Gymnastic Teaching," by Skarstrom, pp. 62-63.

the sake of convenience, of uniformity, and for ease in interpretation of the exercises. Numerals as Commands of Execution should *not* be used exclusively in the presentation of exercises. A variety of expressions should be used in presenting the work to classes.

b. Words that indicate the position to be assumed are used as Commands of Execution for certain corrective exercises. (See Corrective Exercises, Chapter XXVIII.)

6. Avoid teaching by imitation:

With large groups, in formal class instruction, avoid the presentation of exercises by the imitation method. "Do not follow your own command" is a truism in the technique of teaching and should require no further comment or explanation. The interest of the class is lessened, the execution of the exercises is poor and the response is slovenly and careless. Teaching "by imitation" is not recommended for formal class instruction of large groups.

7. Teachers should be able to distinguish between exercises "On Command" and "In Rhythm":

Teachers, in order to get corrective value from the exercises and good results in the execution of the work, should know very definitely the difference between giving exercises "On Command" and "In Rhythm," the reasons for using both methods, and the values to be obtained from each.

8. Exercises "In Rhythm":

a. Commands of Execution:

The words "Begin," "Go," "Start," etc., are recommended as commands of execution in rhythmical movements.

b. Commands for stopping rhythmical movements:

  1. Exercises may be repeated a definite number of times on the R. and the same on the L. No command for stopping a movement is necessary.
  2. The words "Class Halt," "Stop," and "And Stop" are recommended as commands for stopping rhythmical movements.

c. Exercises "In Rhythm" are recommended for large and small groups and for formal and informal instruction. Many values may be obtained from rhythmical movements when the class knows and can perform the exercises correctly:

  1. Circulatory.
  2. Pleasure in rhythmical movements.
  3. Pleasure in work with a group and developing group consciousness.
  4. Development of natural rhythm.

    5. The need for rhythmical training for life situations. Skill in walking, saving of energy in graceful movements as compared to awkward gait, stumbling, falling, etc.
    6. Effect of slowing down and controlling hypertense groups.
    7. Control of incoördination.
  d. Warning for Rhythmical movements:
    1. Do not continue a rhythmical movement that the class does not know or understand.
    2. Do not continue a rhythmical movement that is in itself conducive to poor posture.
    3. Do not continue a rhythmical movement that the class executes poorly.
  e. Methods of stimulating Rhythmical movemennts:
    1. Class count (aloud and quietly).
    2. Teacher count.
    3. Teacher and class count.
    4. Class carry rhythm without audible counting.
    5. Mark time by musical instrument, drum, triangle, etc.
    6. Use of piano, victrola, etc.—metronome.

9. Distinction between numerals used as ''Commands of Execution'' and as Time Markers:

   Do not confuse the numerals used to mark time for the exercise with the numerals used as ''Commands of Execution.''
  a. Numerals as ''Commands of Execution'' precede the exercise.
  b. Numerals as time markers come at the same time as the exercise.

10. Emphasis on all Rhythmical movements:
  a. Good form in all positions.
  b. Accurate positions.
  c. Definite rhythm.
  d. Rhythm adapted to needs of groups and character of exercise.
  e. Rhythm adapted to type.

11. Interpretive Dancing and Pantomime:

   Expression through music by means of dancing and pantomime are recommended for corrective groups. The development of correct body lines, poise and grace of movement can be worked out by means of interpretive dancing and pantomime.

## CHAPTER XXI

## METHODS: CORRECTIVE CLASSWORK FOR HIGH SCHOOL, JUNIOR HIGH SCHOOL AND ELEMENTARY SCHOOL

### Technique in Teaching Small Groups and Individuals

A. Description of exercises:

1. The exercises are described to serve the teacher's need in presenting work to the class if he so desires. They are described in all of the schedules in such a way that teachers may use the terminology presented for both formal or informal presentation of classwork. When instructors in physical education take up a new type of exercise or exercises somewhat different in nature from the traditional exercise, better results will be obtained if the presentation is kept formal even with a small group. When the instructor is thoroughly familiar with the exercise and has the complete confidence of the group, informal methods of presenting the work may be applied with good results. Example: When an instructor presents exercises in a Backward Lying position for the first time, the class may consider it "strange and funny." (See Psychological Application, Chapter XVIII, page 208.) If in this case he keeps the presentation of the exercise strictly formal the class organization is more easily controlled. When both teacher and class have become familiar with and understand the value of the exercises in the Backward Lying position, less formal methods of procedure may be used to good advantage.

B. Presentation of exercises:

1. Why exercises are presented "On Command."

   The recommendation is made that the exercises be presented at least one round "On Command." For reason see Methods, Chapter XX, page 215.

2. The use of "Commands" not indicated as definitely as for large groups.

   Corrective schedules are described so that the exercises may be presented formally "On Command," and "In Rhythm" if desired. (See Introductory Notes, Corrective Schedules, Chaps. XXIV and XXVI. A small amount of some definite organized classwork with exercises presented both "On Command'' and ''In Rhythm'' is recommended for each corrective class. The schedules are written up so that all of the exercises may be given by means of classwork if that method seems most expedient to the teacher. If the groups in the corrective classes are small enough the recommendation is made that ''Commands'' as such be done away with, and that the work be done in the spirit of, ''Let us try out this position''; ''Let us work this problem out together.''

With this method of presentation:

- a. More individual help may be given by the teacher.
- b. More time may be spent on the presentation and demonstration.
- c. Students may be taught to work independently.
- d. Exercises can be supervised and guided by the teacher rather than definitely directed.

3. Special ''Commands'' (see Exercises with Special ''Commands,'' Chapter XXVIII, page 417).
   - a. It is helpful in the presentation of corrective exercises to use words as ''Commands'' that indicate the position to be assumed. It brings about more definite execution of the exercise and gives the student additional knowledge of the position to be assumed by means of the picture presented by the word used. Example: Foot Exercise in Long Sitting Position:

     Curl toes—One! or Curl!
     Turn balls of feet towards each other until toes touch—Two! or Touch!
     Bend ankles upward—Three! or Bend! or Raise!
     Relax—Four! or Position!
   - b. It is helpful in the presentation of corrective exercises to use ''Hold'' with ''Commands'' or ''Numerals used as Commands,'' to emphasize correct form and to emphasize the necessity for holding the position, as:

     Curl toes—Curl! hold, or One! hold.
     Turn feet toward each other—Touch! hold or Two! hold.
     Bend ankles upward—Bend! Hold! Position!

     This device *prevents* students from going rapidly from one position to another without paying attention to accuracy of position.
4. Exercises ''In Rhythm'':

   Rhythmical exercises are recommended for all corrective classes. Although many corrective teachers do not recommend that exercises be given with music for corrective values, the authors recommend that as many methods be used to stimulate the corrective work from the point of view of interest and variety as are made use of for all physical education work.

a. Commands of Execution:
As under Methods, Regular and Restricted Classwork. Exercises "In Rhythm," Chapter XX, page 217.

b. Commands for stopping Rhythmical movements:
As under Methods, Regular and Restricted Classwork, Exercises "In Rhythm," Chapter XX, page 217.

c. Value of Exercises "In Rhythm":
As under Methods, Regular and Restricted Classwork, Exercises "In Rhythm," Chapter XX, page 217.

The reason that more corrective work is not given with music is probably the same as the reason that more physical education work is not given to music. The question of a piano, a pianist, the floor and so forth, all enter into the work in public schools. There is no doubt that the music stimulates, inspires, and makes the work more interesting. The corrective classes of course are the smallest classes in the schools and if a piano and an accompanist are available for the work at all they are usually and should be used to inspire and stimulate the largest numbers. Care should be taken in giving corrective exercises to music that the corrective values and correct body alignment are not lost sight of in swinging from one position to another in following the music presented. If the correct positions are watched, and if the exercise material is carefully chosen there is no doubt that the right kind of music makes corrective exercises more interesting and more valuable. The tempo of the rhythm should be adapted to the range and force of the movement and the character of the exercise. The rhythm should be adapted also to type reactions of the group. (See Type, Chapter IV, page 38.)

5. Special Rhythms. (See Exercises with Special Rhythms, Chapter XXVIII.)

Special rhythms are given for certain exercises to stimulate and interest the group in the exercise.

a. Exercises executed in rhythm and words of Nursery Rhymes or popular songs.
Example: "Tap Tap Partner—Tap Tap Neighbor."

Music. Dance of Greeting. Supplement to Manual, p. 24 (State Board of Education, California).

Circle or Line Formation.
Hook Sitting Position (sitting on floor, knees bent—feet 2 or 3 inches apart on floor, hands at sides and on floor).
Clap—Curl toes and tap floor (keep heels stationary).
Clap—Curl toes and tap floor (keep heels stationary).
Partner—Clap balls of feet together (keep heels stationary).

Clap—as above.
Clap—as above.
Neighbor—Turn balls of feet toward each other and cross feet, keep toes curled and heels stationary.
Stamp—Curl toes—Tap R.
Stamp—Curl toes—Tap L.
1-2-3—Curl toes—Tap R.—L.—R.
Chorus—Tra la—Curl toes and with outer edge of foot on floor—draw R. toward L.—L. toward R.—R. to L., to end of Chorus.

b. Exercises executed in rhythm of limerick.

C. General Points to keep in mind in both individual and class instruction:

1. Aim:

   A special aim in the small groups should be to have the student know what he is working for and to have the student assume the responsibility for the results to be obtained.

2. Organization:
   - a. Give frequent rest periods.
   - b. Do not continue an exercise in which a student does not have sufficient muscular power to control his positions.
   - c. Take the exercises in the most advantageous position to the student.
   - d. Always adapt the work to physiological type. (See Type Characteristics, Chapter IV.)
   - e. Encourage but do not overstimulate.
3. Application of Exercises:
   - a. Have class do each exercise to the fullest extent, with each part of the body in an advantageous position, *i.e.*, do not stimulate the class to extreme effort in upper back exercise, to the extent that an exaggerated low back results.
   - b. Have class think in terms of form and accuracy and nicety of position rather than speed and endurance.
   - c. Combine accuracy of gymnastic technique with smoothness of rhythmic action; execute with ease and grace as an intelligent expression of a whole idea.
   - d. Continue an exercise only so long as the interest and the strength of the individual allow the exercise to be executed in good form; give a rest period before fatigue gives an excuse for poor form.
   - e. Teacher should think in terms of physiological needs, giving the students an interest in improvement of form and in working knowledge of the exercise rather than finished drill products, and a presentation of a great variety of material.

4. Class Spirit and Control:
   a. Informal presentation of exercises.

      Teacher should give instructions in an informal manner to get the confidence of the students. Elimination of "Command" as such is recommended. The teacher issuing commands as a director of the group should not be the predominant idea. The spirit should not be "Do this" and the class obey. The spirit should be: teacher and class working together as a unit towards one goal. The students should have a clear idea of the work that they are to do to assist in their own health problem and should seek out the teacher for all possible help and guidance for their own particular cases.

      The relation of the teacher should be that of a friend who is interested in each individual and who serves as an inspiration and guide to all. With this spirit the class will go far towards solving the problems of underweight, posture, general fatigue and nervousness that characterize this group. Both teacher and student should have an accurate knowledge of what each student is attempting to accomplish. The teachers of corrective groups should have understanding, sympathy, patience, and a great deal of endurance; they should have the ability to interest the individual students.
   b. Frequent change of methods of presentation is necessary.
   c. Encourage students to work independently; give sufficient individual instruction to place the responsibility for results on the student; praise and give credit to the students for good results. The student should be interested in working independently on his own problems from the point of view of trying to eliminate the cause of postural defects and carrying out to the best of his ability the exercise presented. He should know definitely the exercises that will help him specifically and should establish definite daily health and postural habits to contribute to correct development.
   d. Both Class and Individual Instruction Recommended:

      Teacher should make use of class as well as individual instruction. If teacher makes use of individual instruction exclusive of class instruction he may lose "class spirit" and "class consciousness." The class spirit and control should be stimulated and helped by means of presentation of at least part of the work to the group as a whole.
   e. Classification and Squad Organization:

      Teacher should make use of classification and squad organization to make classwork more specific and definite.

and to bring about more tangible results. Squad assignment according to postural defect (Chapters XXIV and XXVI, Int. Notes) makes it possible for teacher to stimulate and guide the squads with exaggerated hollow backs during "Low Back" exercises; the squad with exaggerated foot conditions during foot exercises. This squad assignment also makes it possible to have students working as a squad on the exercises for specific defects. For instance, have each squad work on exercises for specific defect one day a week. Squads with exaggerated hollow back work specifically on Abdominal and Low Back Exercises; squads with extreme foot conditions work on Foot Exercises.

D. Methods of Stimulating Interest in Corrective Groups:

1. Physical Examination:

The corrective teacher should have on file for use and reference a card or slip with diagnosis of the physician as to both postural and general defects. The corrective teacher should have in mind the general condition of the students. If there are diseases, bad tonsils, or eye defects, and if students and parents refuse to have the defects taken care of, the corrective teachers should be aware of this situation. General defects such as undernourishment, bad tonsils, and eye defects interfere with good results in corrective classes.

2. Records:

a. Corrective Card for Individual Students.

Teacher should have a record of defects and contributing causes for reference and use. Corrective card should be so arranged that conditions and improvements may be checked and noted from time to time.

Card should cover information as follows and opportunity for checking:

1. One side of card—General Information, as:

City Schools—Corrective Physical Education.

Date Year Period

School

Disability.

Heredity (Parental type—Lithe, Medium, Stout.)

Recommendations.

Assignment (Restricted—Corrective—Nutrition—Recreation.)

Remarks.

2. Other side of card:

City Schools—Corrective Physical Education.[1]

| DATES | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Age | | | | | | | | | | | |
| Height | | | | | | | | | | | |
| Weight | | | | | | | | | | | |
| Normal Weight | | | | | | | | | | | |
| Over or Under | | | | | | | | | | | |
| *Types* | | | | | | | | | | | |
| Lithe—Tall—Short | | | | | | | | | | | |
| Stout—Tall—Short | | | | | | | | | | | |
| Medium—Tall—Short | | | | | | | | | | | |
| Nervous | | | | | | | | | | | |
| *Postural Condition* | | | | | | | | | | | |
| Head | | | | | | | | | | | |
| Chest | | | | | | | | | | | |
| Abdomen | | | | | | | | | | | |
| Shoulders | | | | | | | | | | | |
| Shoulder Blades 1-2-3 degree | | | | | | | | | | | |
| Hips (high or prominent) | | | | | | | | | | | |
| Legs—KK—BK—BL | | | | | | | | | | | |
| Ankles | | | | | | | | | | | |
| Feet—Longitudinal arch 1-2-3 degree | | | | | | | | | | | |
| Feet—Anterior Arch and Toes | | | | | | | | | | | |
| Back—Kyphosis | | | | | | | | | | | |
| Lordosis | | | | | | | | | | | |
| Scoliosis | | | | | | | | | | | |

Referred:

School Physician.
Orthopædic Clinic.
Dentist.
Oculist.
Orthopædic Surgeon.

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[1] See "Technique of Examination," Chapter V.

3. Method of checking card:

A convenient and easily understood way of marking the card is by checking with (√) signal, the postural condition as follows:

Four checks (√ √ √ √) indicates serious forward head, etc.
Three checks (√ √ √) extreme condition—severe.
Two checks (√ √) more than slight—moderate.
One check (√) noticeable—slight.

Corrective Physical Education

| DATES | Oct. | Dec. | Jan. | March | May |
|---|---|---|---|---|---|
| Age | 15 | 15 | 15 | 15 | 15 |
| Height | 61″ | 61″ | 61″ | 61″ | 61″ |
| Weight | 94 | 97 | 97 | 99 | 101 |
| Normal Weight | 106 | 106 | 106 | 106 | 106 |
| Over or Under | 12 | 9 | 9 | 7 | 5 |
| *Types* | | | | | |
| Lithe—Tall—Short | | | | | |
| Stout—Tall—Short | | | | | |
| Medium—Tall—Short | √ | √ | √ | √ | √ |
| Nervous | | | | | |
| *Postural Conditions* | | | | | |
| Head—Forward | √√√ | √√ | √√ | √ | Imp. |
| Chest | √ | √ | √ | O. K. | O. K. |
| Abdomen—Protruding | √√√ | √√ | √√ | √ | Imp. |
| Shoulders—L. High | √ | √ | √ | O. K. | O. K. |
| Shoulder Blades 1-2-3 degree—Sep. | √√√ | √√ | √√√ | √√ | √ |
| Hips (high or prominent)— | O. K. | O. K. | O. K. | O. K. | O. K. |
| Legs—KK—BK—BL | BK | √ | √ | | Imp. |
| Ankles—Pronation | √√√ | √√√ | √√ | √ | √ |
| Feet—Longitudinal Arch 1-2-3 degree | √√√ | √√√ | √√ | √√ | √√ |
| Feet—Anterior Arch and Toes | | | | | |
| Back—Kyphosis | √√√ | √√√ | √√ | √ | √ |
| Lordosis | √√√√ | | √√√ | √√ | √ |
| Scoliosis— | √ | √ | √ | O. K. | O. K. |

Referred:

School Physician.

Orthopædic Clinic.

Dentist.

Oculist.

Orthopædic Surgeon.

General Remarks:

Referred Oct., 1926, to Orthopædic Clinic for feet.

Feet strapped at clinic Nov. 2 and kept under observation for 12 wks.

Improvement in posture due to spirit of coöperation in exercises and conscientious work to gain weight.

Recommend Restricted Physical Education for next year—May 26.

4. Explanation of check in Card:

The postural conditions as described above—a fatigue posture extreme with L. Shoulder High, underweight 12 lbs. Medium Type. The condition in October as shown by card:

Underweight twelve pounds.
Head (Forward) Severe as indicated by three checks.
Chest—Slight as indicated by one check.
Abdomen—Severe as indicated by three checks.
Shoulder L. high—Slight as indicated by one check.
Shoulder blades—3d degree separation.
Legs (Slight Back knee) Slight as indicated by one check.
Ankles (Pronation)—Severe as indicated by three checks.
Feet Longitudinal 1-2-3 degree—Third degree flat foot as indicated by three checks.
Back—Kyphosis—Severe condition as indicated by three checks.
Lordosis—Serious condition as indicated by four checks.
Scoliosis—Slight condition as indicated by one check.

Conditions in examination in December, January, March, and May show improvement by the removing of the checks.

Imp. indicating improved conditions—conditions not serious enough to be marked by a check.

O.K. indicating variation from normal condition not noticeable.

The final examination in May indicated postural conditions as follows:

Weight: Gain seven pounds; underweight five pounds.
First degree separation of shoulder blades.
Ankle pronation slight.
Flat foot second degree.
Lordosis slight.
Head, shoulders, protruding abdomen, back knee and kyphosis all much improved, as indicated by "Imp." or "O.K."

Third degree flat foot in a fifteen-year-old girl would require more than one year's work for correction. Recommendation for this case would be the next step after Corrective—"Restricted Physical Education," with emphasis on foot exercises. Too strenuous or too heavy work in any line should not be given this student with underweight and postural conditions as indicated. One additional year with restricted activities and foot exercises should place this student in the regular physical education class the following year. (See Restricted Physical Education, Chapter XXIII.)

b. Corrective Chart for Group.

A chart method using examination feature as in Technique of Examination, Chapter V, may be used. Method employed is as follows:

"At the beginning of the quarter of semester, the new pupils are lined up and the examiner, accompanied by a secretary, passes down the line and notes, first, all cases of unlevel shoulders. Then placing the thumbs on the anterior superior spine of the ilia, unlevel hips or tilted pelvis are noted.

The secretary notes the pupil's name, each time under each defect. Lining them up again, the examiner approaches from the end of the line, passing the hand over the back and notes prominence of scapulæ, round, flat or hollow back, and head position.

Position of the squad is again assumed and by slight pressure backward on the knees as well as by direct inspection, back knees are detected. Next, have the pupils stand with feet parallel, knees touching. Those whose malleoli touch and the condyles do not, obviously have varying degrees of bow legs and the converse detects knockknees.

In the feet parallel position, if the patella points toward the body and not forward in the median line of the leg, there exists inward rotation of the leg and compensatorily pronated ankles or relaxed arches.

Bring the class to attention again without calling attention to their feet and note foot positions. In gymnasium shoes it is easy to observe faults in foot alignment and a notation is made as to pronation and relaxed feet.

When these data are assembled it will be found that certain ones will be registered for two or three defects, or, in a word, are generally relaxed. This group should have immediate attention. Word should be sent to the parents for permission to make a detailed examination with clothing removed and cases that need expert attention should be referred to the proper clinics or orthopædic surgeon for necessary care.

In such a group of school children fully sixty-five per cent will have two or more deviations from normal alignment. An instructor would not be able to estimate the size of the groups needing special attention to certain deviations until several weeks had been lost or many subjected to improper exercise or recreation, but by the above method their corrective and general gymnastic procedures can be quickly adjusted to reasonably correct groups. Fifty or sixty pupils can be roughly gone over in an hour, and with a little experience and knowledge of types, the gravest faults can be detected."[1]

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[1] From "Preventive and Prophylactic Orthopædic Practice," Lowman, *Journal of Orthopædic Surgery*, Vol. III, No. 11, November, 1921.

A chart to record the data for groups examined as worked out by Miss Catherine Worthingham of the John Muir Technical High School, Pasadena, Cal.

## CORRECTIVE PHYSICAL EDUCATION

|  |  |  |  |  |  |  | Mary Wilson | Jean Tucker | Year ——<br>Class ——<br>Section ——<br>Names |
|---|---|---|---|---|---|---|---|---|---|
|  |  |  |  |  |  |  |  |  | Type (Lithe, Medium, Stout) |
|  |  |  |  |  |  |  |  |  | Height |
|  |  |  |  |  |  |  |  |  | Weight |
|  |  |  |  |  |  |  |  |  | Normal Weight |
|  |  |  |  |  |  |  |  |  | Under or Over |
|  |  |  |  |  |  |  |  |  | Head (Tilt or Rotation) |
|  |  |  |  |  |  |  |  |  | Shoulders (High Shoulder) |
|  |  |  |  |  |  |  |  |  | Scapulæ (Separation or Projection) |
|  |  |  |  |  |  |  |  |  | Back--Kyphosis |
|  |  |  |  |  |  |  |  |  | Lordosis |
|  |  |  |  |  |  |  |  |  | Scoliosis |
|  |  |  |  |  |  |  |  |  | Abdomen |
|  |  |  |  |  |  |  |  |  | Anterior Superior Spines (High) |
|  |  |  |  |  |  |  |  |  | Hips (High or Prominent) |
|  |  |  |  |  |  |  |  |  | Knees (K.K., B.L., B.K.) |
|  |  |  |  |  |  |  |  |  | Tibial Torsion |
|  |  |  |  |  |  |  |  |  | Pronation |
|  |  |  |  |  |  |  |  |  | Longitudinal Arch |
|  |  |  |  |  |  |  |  |  | Anterior Arch |
|  |  |  |  |  |  |  |  |  | Heel Cord |
|  |  |  |  |  |  |  |  |  | Hammer Toes |
|  |  |  |  |  |  |  |  |  | Hallux Valgus |
|  |  |  |  |  |  |  |  |  | Gait |

## KEY TO CHART[1]

Type
  L—Lithe type.
  M—Medium type.
  S—Stout type.
Head
  T.F.—Tilt forward.
  T.L. or R.—Tilt left or right.
  Rot. R. or L.—Rotated R. or L.
Shoulder
  R. or L.H.—Right or left high.

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[1] See "Technique of Examination," Chapter V.

Scapulæ
  Sep. 1—Separation 1st degree.
  P. 1—Projection 1st degree.

Back
  K. 1-2-or 3—Kyphosis 1st-2nd-3rd degree.
  L. 1-2 or 3—Lordosis 1st-2nd-3rd degree.
  S.—Scoliosis.

Abdomen
  1-2-3—indicates 1-2-3 degree protruding abdomen.

Anterior Superior Spines
  L. or R.H.—Left or Right High.

Hips high or prominent
  L. or R.H. or P.—Left or Right high or prominent.

Knees
  KK.—Knockknee.
  BK.L. or BK.R.—Back Knee Left or Right.
  BL.—Bow Legs.

Tibial Torsion
  1-2-3—1st-2nd-3rd degree torsion.

Pronation
  1-2-3—1st-2nd-3rd degree ankle pronation.

Longitudinal Arch
  1-2-3—1st-2nd-3rd degree.

Anterior Arch
  1-2-3—1st-2nd-3rd degree.

Heel Cord
  1-2-3—1st-2nd-3rd degree tight.

Hammer Toes
  1-2-3—1st-2nd-3rd degree as to condition.

Hallux Valgus
  1-2-3—1st-2nd-3rd degree as to condition.

c. Printed "blank forms" for information for parents:

In the organization of corrective classes printed slips have been helpful.

1. Notifying parents that student has been assigned to corrective physical education—with reason for assignment—and indicating the need for correction in certain lines as rest, exercise, etc.
2. Notifying parents that student should be referred to orthopædic surgeon or dispensary for examination and treatment.

Suggested form:

———————— City Schools
Dept. of Physical Education
School ———————— Date ————————
To Mr. or Mrs. ————————
———————— Assigned to ———————— Physical Education
because of

Recommendation—Rest Exercise at home Refer to Orthopædic Surgeon or Dispensary

Office Hours

Further information call Telephone ———————— Supervisor

Key to blank—Underscore or check recommendation to be made to parent and fill in rest of blank as indicated.

d. Mimeograph or written notes to parents stating the time the child has corrective physical education and inviting the parents to visit the class at a definite time.

e. Records of Foot Conditions:

Various methods have been used to make a picture of the fallen arch and the flat foot.

1. Foot Print.

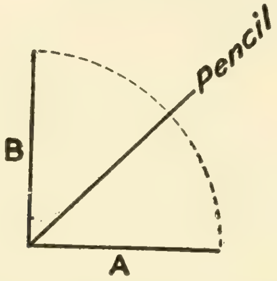
The print of the foot may be taken by stepping in liquid and then stepping on paper—black or white—to record the print, or by use of the "Foot-O-Print" machine. The print of the foot with a good arch shows that the foot touches the floor approximately at the metatarsal joint, the outer border of the foot and the heel. The print of the flat foot shows the entire surface of the foot touching the floor. In some cases it is possible for a bad flat foot condition to make a print that seems to indicate a good arch. A great deal depends upon the way the print is made and the way the weight is borne, etc. In a print of the bottom of the foot there is no indication of ankle pronation.

This method of recording flat feet is interesting for comparative purposes, but is not absolutely reliable in indicating arch conditions because of variations in thickness.

2. Foot Tracing.

An excellent outline of the foot can be made by tracing around the foot with a pencil, or with a pencil block combination. The block holds the pencil firmly.

Place the surface "A" on the table and the surface "B" follows around the foot and prevents the pencil from moving. This makes a more accurate tracing. If pencil is used alone it should be held perpendicular to the floor. The student should be careful to stand with the weight equally divided, feet toeing forward. The outline of the foot traced in this manner will show a bulging arch, ankle pronation, and flat anterior arch.



This method of tracing the foot is not absolutely reliable in indicating flat foot conditions, but is interesting also for comparative purposes. The following methods to check the foot exercise work may be used:

a. Make an outline of both feet as described above in the ordinary standing position—feet forward with weight evenly divided.

b. Have the student rotate the thighs outward and pull up the arches and make as strong a correction of the feet as he can—and again make an outline of the feet as described.

Show the student the difference between the outline tracing of the ordinary standing position and the corrected position. There will be sometimes a half inch difference indicated on the inner borders of the feet, when the student has drawn the foot into the correct position.

c. Six months later make drawings again of the ordinary standing position and the corrected position. On the inner border the difference between the ordinary standing position and the corrected position will not be so great—showing that the exercises have improved the position of the arch in the ordinary standing position.

The tracing of the foot indicates improvement or lack of improvement in the ordinary standing positions and corrected position and serves as a means to stimulate interest in checking the results secured by the foot exercises.

3. Comparison of outline of foot and outline of shoe.

Some practical lessons in the right kind of a shoe can be brought out by tracing the outline of the feet of the student and by tracing the outline of the shoes of the student and comparing the two.

f. Records by Photograph:

Various methods are used to stimulate better results in posture work by means of photographs.

1. Photographs:

When students enter the corrective classes a picture is taken—front and side view of individual or group.

At the end of the semester's work a second view is taken—front and side—to show improvement gained by corrective exercises in individual or group. (Picture should be taken at the same focal distance.) At the end of the year a third picture is taken to show further improvement.

a. Photographic Records of individual and group taken with clothing on in school room or on grounds cannot be used as accurate indications of improvement, but can be used to check results and to stimulate improvement.

b. Photographic Records for Posture Correction to indicate *accurate* results should be taken without clothing, or at least in tight bathing trunks and at regular intervals with regular follow-up examination and measurements.

2. Schematograph (of Mosher & Lesley).

Records by means of the Schematograph are recommended by Drew.[1] The Schematograph is a machine by means of which the outline of the figure may be traced. This method may be used also to check results and to stimulate improvement.

3. Posture Silhouettes.

Mr. N. W. Fradd of the Department of Physical Education, Harvard, has perfected a machine called the Silhouetteograph.[2]

"The equipment includes a screen of architect's tracing linen mounted on a frame about 7 feet high and 3 feet wide, and illuminated by a 1,000-watt electric light placed 3 to 5 feet behind it. The child stands sidewise directly in front of the screen, so that a photograph produces a profile silhouette. The silhouetteograph camera is placed about 10 feet in front of the child. This camera takes the picture directly on sensitized bromide paper with an exposure of about five seconds. One of the features of the camera is its movable plate holder, which allows multiple exposure on the bromide paper, the number depending on the size of the picture desired. Stencil numbers on the screen identify the pictures. A picture can be taken, developed, and fixed in two or three minutes. If a large number are done at one time, the time necessary for each picture is reduced and the cost can be brought down to about 1 cent per picture.''[1]

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[1] Drew: "Individual Gymnastics," p. 77.

[2] Norman W. Fradd: "A New Method of Recording Posture," *Journal of Bone and Joint Surgery*, Vol. V, No. 4 (October, 1923), pp. 757-758.

The use of the posture silhouette is recommended also as an expedient method of presenting to the student a picture of postural conditions as they exist in his own case. The posture silhouette taken at the beginning of the corrective physical work and later as the results of the work may be seen, serves as a definite method for checking results.

3. Health Habit Contest:

As a great deal of the success of the work with the special posture groups depends upon the interest of the group and the ''follow up'' habits established at home and school as a result of the instruction, the health habits may be stimulated and improved by a Health Habit Contest.

a. The contest should be continued for a minimum of 8 weeks each semester in order to really establish habits.
b. Score one point for each of the following or choose for each child according to needs.
    1. One point for each pound gained (weight every 2 weeks).
    2. One point for individual exercise (performed by boy or girl) without the help of the teacher.
    3. One point for good behavior.
    4. One point for correct posture on entering and leaving the corrective room and between exercises.
    5. One point for home exercises.
    6. One point for hot dish at noon.
    7. One point for fresh vegetables and fruit daily.
    8. One point for rest after school daily.
    9. One point for milk at school.
    10. One point for cleanliness.

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[1] Posture Exercises, No. 165, United States Department of Labor, Children's Bureau.

## SCORE CHART

### Posture Class—Health Contest

Points to be scored: Gain (1); Exercise or Behavior (1); Home Exercise (1); Posture (1); Cleanliness (1); Milk (1); Hot Dish at Noon (1).

| NAMES | M. | T. | W. | T. | F. | Tot. | M. | T. | W. | T. | F. | Tot. | M. | T. | W. | T. | F. | Tot. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | | | |

c. Record the points each day in the week—or two or three days a week regularly. Place score on chart posted in the corrective room, so that boys and girls may see and watch their records.

d. A ribbon badge should be given for first place scored in each class.

e. Score points in chart form as follows.

4. Reëxamination and Promotion:

To stimulate interest in work and to reward efforts of those who have obtained good results, reëxaminations should be made at the close of each semester and students promoted to the next group—Restricted Physical Education or Regular Physical Education. (See Classification, Chapter XIV, page 123.)

# PART IV

## CHAPTER XXII

### SCHEDULES OF EXERCISES

### METHODS OF INSTRUCTION FOR USE OF ALL SCHEDULES OF EXERCISES

I. Restricted Physical Education Schedules—High School and Junior High School. (See Chapter XXIII.)

  A. These schedules are recommended for the use of regular classes in physical education in Colleges, High Schools and Junior High Schools, for girls and boys, until such time as the following common obvious errors are eliminated in regular classwork:

    1. Toeing out and ankle pronation in Foot Placing and Lunges.
    2. Exaggerated Hollow Back in Head and Shoulder Blade Exercises.
    3. Faulty positions of head with Arms Vertical and Trunk Movements.
    4. Incorrect tilt of the pelvis with protruding abdomen, in Balance, Abdominal and Leg Movements.

  B. Restricted Physical Education according to classification of Students. (See Chapter XIV.)

  Applicable to College, High School and Junior High School Classes.

    1. Students who have slight postural defects.
      a. General.
      b. Feet.
    2. Students characterized by nervous instability.
    3. Students who have poor muscle tone.
    4. Students slightly below par physiologically (nutrition, heart, etc.).
    5. Students in transitional stage in passing from corrective to regular physical education.

II. Corrective Physical Education—High School and Junior High School. (See Chapter XXIV.)

Schedules are recommended for the use of corrective classes in Physical Education in College, High School and Junior High School for boys and girls according to classification of students. Anatomical growth handicaps. (Functional.)

1. Assignment.
    a. Growth handicaps:
        1. Physiological. (Functional.)
            a. Heart.
            b. Lungs.
            c. Endocrines.
            d. Observation after illness.
        2. Anatomical. (Functional.)
            a. Lithe and Stout Types.
                1. Anteroposterior:
                    1. Forward Head.
                    2. Round shoulders (shoulder girdle).
                    3. Kyphosis (Round back—total—dorsal and lumbar region).
                    4. Kypholordosis (Round hollow back).
                    5. Lordosis (Hollow back—lumbar region).
                    6. Flat back (Dorsal and lumbar regions).
                    7. Flat chest.
                    8. Protruding abdomen.
                    9. Pelvis:
                        a. Exaggeration of anteroposterior tilt.
                    10. Feet:
                        a. Ankle pronation.
                        b. Flat feet, 1st, 2nd and 3rd degrees.
                2. Lateral defects (usually associated with one or more anteroposterior defects).
                    1. Scoliosis. (Postural.)
                    2. Lateral tilts and torsions of pelvis.
                3. General (usually associated with anteroposterior and lateral defects).
                    1. Incorrect balance.
                    2. Relaxed posture.
                    3. Muscular insufficiency due to overfatigue and undernourishment.
            b. Medium Type:
                1. Postural conditions as above.

                    NOTE: Medium type students unless characterized by exaggerated postural conditions should be able to correct same in regular physical education classes. (Otherwise classify under "Stout Type—Corrective.")

III. Restricted Physical Education—Elementary Schools. (Chapter XXV.) Posture Training—Exercises for School Room and Playground, Grades 4-8.

Schedules are recommended for Grades 4-8, boys and girls in the elementary schools. Exercises are described so that they may be given by the classroom teacher, either in the school room or on the playground. The seats in the school room are utilized for exercises in the sitting position. Benches on the playground are recommended for exercises in the sitting position. Exercises may be adapted and simplified for lower grades.

IV. Corrective Physical Education—Elementary, Small High School and Junior High School. (See Chapter XXVI.)

Schedules are recommended for the use of corrective classes in physical education for Elementary and Small High and Junior High Schools, for boys and girls according to classification. Functional anatomical growth handicaps. See Corrective Physical Education—High School and Junior High School, page 239.

V. Exercises for Specific Conditions—College, High School and Elementary School. (See Chapter XXVII.)

Exercises for specific conditions are recommended for individual assignment to be carried out by individuals characterized by such conditions under the supervision of the teacher of corrective physical education.

Exercises to be used for College, High School, Junior High School and Elementary School Students:

1. Round shoulders.
2. Kyphosis (Round Back).
3. Kypholordosis (Round Hollow Back).
4. Lordosis (Hollow Back).
5. Flat Back.
6. Scoliosis (postural).
7. Feet—weak anterior arch.
8. 1st and 2nd degree flat foot with short heel cord.
9. 3rd degree flat foot, flexible, with short heel cord.
10. Exercises to stretch tendo Achillis.
11. Hyperextension of the knee.
12. Claw feet.
13. Knockknees and pronated ankles.
14. Exercises for menstrual period.
15. Constipation.
16. Heart.
17. Overweight.

VI. Corrective Exercises for Groups with Special Application, Chapter XXVIII.

1. Foot Exercises for group work for large groups, to be adapted to College, High School, Junior High School and Elementary School when it is not possible, because of environmental conditions, to have exercises in Sitting or Recumbent Positions.

2. Foot Exercises—Exercises for General Posture for kindergarten and first grade. Corrective Exercises stated in terms applicable to small children.
3. Corrective Exercises and Games Recommended for Special Classes.
    1. Adjustment Classes made up of retarded pupils.
    2. Accelerated groups.
4. Exercises with Special Rhythms—Rhythms, limericks, nursery rhymes and popular songs for corrective exercises to relieve monotony and to stimulate and interest the group.
5. Exercises with Special Word Commands—Illustration of Corrective Exercises with words that indicate the position to be assumed as commands.
6. Rhythmical drill for boys and girls of 4-5-6 grades.

    Drill presenting big muscle activities emphasizing the play element and corrective values.
7. Balance Board Exercises.

    Balance Board Exercises for groups to be adapted to College, High School, Junior High School and Elementary groups with Passive Posture and Foot Correction.
    1. Standing.
        1. Free Hand.
        2. Bouncing Ball.
        3. Indian Clubs.
        4. Dumb Bells.
    2. Marching.
        1. Low Boards, Elementary.
        2. High Boards, Elementary.
        3. High Boards, Advanced.

# CHAPTER XXIII

## Restricted Physical Education

## HIGH SCHOOL AND JUNIOR HIGH SCHOOL—SCHEDULES OF EXERCISES—INTRODUCTORY NOTES

I. Classification of Students:

- A. Regular Physical Education Classes.
- B. Students Assigned to Restricted Physical Education.
  1. Students who have slight postural defects, general and feet.
  2. Students characterized by nervous instability.
  3. Students who have poor muscle tone.
  4. Students slightly below par physiologically (nutrition, heart, etc.).
  5. Students in transitional stage in passing from corrective to regular physical education.

II. Equipment:

Room—Free Wall Space—Tilted Balance Boards—Equipment for Suspension and Recumbency Exercises. (See Equipment, Chapter XV, page 130.)

III. Work Outlined:

Exercises to secure correct body alignment—Minimum marching tactics—Big Muscle Activities—Suspension Exercises. Emphasis placed on exercises in Recumbent and Sitting Positions. (See Values of Recumbency, Chapter XI, page 102.)

Emphasis on Foot Exercises.

IV. Time Required for the Schedules:

Schedules are planned for a one-hour period with time for dressing, shower bath and passing.

V. Number of Times Per Week:

Recommendation is made that schedule be given two or three times a week according to the needs of the class and the results obtained. (See Monthly, Weekly and Daily Schedule, Chapter XVI, page 140.)

VI. Progression to New Schedules:

Two weeks (four or six periods) should be spent on each schedule. Sufficient time should be spent on the exercises to secure a complete understanding of the subject matter presented.

VII. *Fundamental Positions.* (*For detailed Fundamental and Starting Positions description and illustrations see* Chapter XVIII, page 187.)

In all Fundamental Positions, in all exercises, hands are at the sides unless otherwise designated.

VIII. *Nomenclature.* (*For detailed Nomenclature, discussion and directions see* Chapter XVIII, page 203.)

- A. Statement of exercise:

  Exercises are stated as clearly and as concisely as possible to convey the meaning desired.

- B. "Return" and "Position" are used as preparatory commands in all exercises for the commands of execution "Three" and "Four."
  1. "Return" indicates the return from the position assumed on count "Two"!
  2. "Position" indicates the return to the starting position.
  3. "Relax" may be substituted for one or for both "Return" and "Position."
- C. Presentation of Exercises:
  1. "On Command."

     The general recommendation is made that the exercises be given for at least one round "On Command."
     - a. To teach position.
     - b. To secure correct execution.
     - c. To emphasize good form and clean-cut definite movements.
  2. "In Rhythm."

     If the positions are clear in the minds of the students after the first round of the exercise "On Command" the exercise should be started "In Rhythm." If the positions are not clear after one round "On Command" more time should be spent in teaching and correcting positions before the exercise is started rhythmically.
  3. Special Rhythms.

     Special Rhythms for certain exercises are recommended. (See Foot Exercises and Limericks, Chapter XXVIII, page 414.) (See Methods, Chapter XXI, page 221.)
  4. Special Commands.

     Words suggesting the position to be assumed are recommended for commands for certain exercises. (See Exercises, Chapter XXVIII, page 417.) (See Methods, Chapter XXI, page 220.)
  5. Breathing Exercises.

     Breathing exercises are not given in set rhythm established by teacher.

D. Number of Repetitions:

Exercises are to be repeated four times R. and four times L. unless otherwise stated. (Variation should be made by the teacher to meet the needs of the class.) Mimetic exercises 16 or 32 counts.

IX. Class Organization:

Class should be organized as any regular Physical Education group for floor work. Suggestion is made that the class be divided into lithe, medium and stout types.

Suggested formation for classwork:

1. Single line alignment: Medium first, Lithe second, Stout at end of the line.

   NOTE: Class arrangement with the Medium group leading, the Lithe next with the Stout at the end of the line should help to establish a suitable rhythm. The Medium group as leaders would tend to stabilize and control the rhythm and spirit of class consciousness which the Lithe would have to follow. The Stout type could fall in more or less according to their ability. (See Type Characteristics, Chapter IV, page 38.)

2. Class formation: Medium on the left, Lithe in center, Stout on the right. (See Organization, Chapter XVI, page 136.) (See Note under "1.")

X. General Aims of Schedules:

1. To give sufficient marching tactics and general recreational marching to secure class control and organization and to retain and stimulate class spirit.
2. Majority of exercises in Recumbent and Sitting Positions to give maximum assistance in the correction of postural defects.
3. Emphasis on "Abdominal and Low Back" exercises and "Foot Exercises."
4. Big Muscle and apparatus work to stimulate the interest of a large group.

XI. Sequence of Exercises:

The exercises in this series are given in the following order. Teachers are urged to adapt the order to the needs and ability of the particlar groups.

1. General Organization:

   Marching—Skipping—Running for:

   a. Class Organization.

   b. General Relaxation

2. Feet and General Posture:

   Foot exercises and correct position of the feet are emphasized at the beginning and throughout the schedules because correct foot alignment is essential and fundamental to correct body posture.

3. Head and Upper Back:

   Exercises to correct faulty head and upper back position, to strengthen the relaxed muscles at the back of the neck and of the upper back are given in a Sitting Position or with a broad base for:

   a. Rest purposes—to avoid unnecessary load on joints and muscles of the feet and legs.
   b. To decrease gravity pull.

4. Feet:

   Exercises to correct faulty foot position emphasized in order to secure an improved foundation for the body architecture.

5. Abdomen:

   Abdominal exercises to strengthen weak and relaxed abdominal muscles in a Recumbent Position, in a Sitting Position, or with a broad base.

   a. To reduce fatigue and strain on both cardiovascular and neuromuscular mechanism.
   b. To secure localization of certain muscle groups.
   c. To get strong abdominal muscle action with less general body strain.
   d. To improve function of viscera; to hasten blood flow from abdominal area and to improve metabolism.

6. Breathing:

   Breathing follows the abdominal exercises due to the physiological necessity caused by the exercise of Big Muscle Groups. (See Breathing Exercises, Chapter XVIII, page 201, and Principles of Correct Breathing, Chapter XII, page 107.)

7. Lower Back:

   Exercises to strengthen the low back muscles and to flatten the lumbar spine are given in Recumbent Position, in a Sitting Position, or with a broad base.

   a. To lessen coördinative strain and reduce fatigue.
   b. To secure localization of certain muscle groups.
   c. To decrease the possibility for incorrect positions with resultant low back strain.

8. Upper Back:

   An additional head and upper back exercise is given:

   a. To correct and strengthen upper back and neck muscles.
   b. To neutralize the forward head tendency in some of the abdominal and low back muscle work.

9. Big Muscle Group:

   Big Muscle Group activity for large joyous free movement follows the work for the control and development of the different segments of the body.

- a. Gives opportunity for "Big Muscle" joyous free movement.
- b. Exercises presented, as Swimming, Baseball and Basket Ball Mimetics, because of the play interest in the activity, etc. To serve as a connecting link between the play program and the more formal posture training program.
- c. Exercises presented as Swimming, Baseball and Basket Ball Mimetics, based on activities of the group according to classification. To assist in training for skill in these activities. These exercises should serve as actual background in these skills and should be performed as accurately as possible. The play spirit should predominate to give actual technical training.

10. Apparatus:

    Stall Bars—Tilted Balance Boards—Wall.

    - a. Class Organization.

      The suggestion is made that the apparatus be made use of by means of rotating squads, utilizing all the apparatus simultaneously. In this way all of the squads get the benefit of all of the apparatus in one lesson. If teachers find it impossible to organize the class with three squads doing different things, it is recommended that at the beginning of the adoption of this type of work one piece of apparatus be used for a squad while the others watch, each squad in turn participating and watching until the exercises are learned. Proceed then to the next piece of apparatus. Work up to the rotating schedule. The rotating schedule will be easier to handle from the point of view of class management and from the point of view of results obtained by the exercises after the material is familiar to the group.
    - b. Purpose of Apparatus—General.
        1. Variety of exercises for general stretching, body balance, postural values.
        2. Additional corrective value.
        3. Joy and play element.
        4. Skill gained in handling body in relation to the apparatus used.
    - c. Purpose—Specific.
        1. Stall Bars.
            - a. Stretching of spinal structures secured by passive hanging.
            - b. General strengthening.
            - c. General flexibility (for rigid and semi-rigid cases only).
            - d. Stretching of pectorals.

2. Tilted Balance Boards.
    a. Fundamental corrective standing position.
    b. Correct body balance.
    c. Inversion and adduction of foot.
    d. Passive stretching of peroneals.
3. Wall.
    a. As a means of orientation in relating various body segments to each other as "Back flattening to correct pelvic tilt."
    b. As an aid in visualizing correct body alignment.
    c. To use as support and fixation in localizing certain muscle groups as "Shoulder girdle fixation for abdominal work."

11. Breathing—Feet:

Breathing exercise is given at the end of the schedule because of the physiological need for breathing after the Big Muscle and apparatus exercises.

A final check on the correct position of the feet is recommended at the end of each schedule.

## Restricted Physical Education—High School and Junior High School—Schedules of Exercises

### SCHEDULE I

1. General Organization.

Marching single file round room. Halting on two counts.
Skipping, toeing forward.
√ Pigeon toe marching (keep heels down).

2. Feet—General Posture. (See Fig. 63.)

Standing Position.

Arm turning outward, breathe in, with thigh rotation outward (turn knees out, grip buttocks together, twisting thighs outward—keep big toe joints on the floor)—One!
Return and Exhale—Two!

Note: Centering the attention on the buttocks emphasizes the thigh element. (See External Thigh Rotation, Chapter XIII, page 114. See Grip Buttocks, Chapter XVIII, page 206.)

3. Head—Upper Back.

Cross Sitting Position.

√ Arms side horizontal, turn palms upward—One!
Return—Two!

4. Feet.

Long Sitting Position. (See Fig. 69, page 300.)

Curl toes—One!

Turn balls of feet toward each other until toes touch (knees on floor, heels stationary)—Two!

Bend ankles upward—Three!

Relax—Four!

NOTE: Flexing the toes relaxes the toe extensors, thereby throwing them out of action in association with the anterior tibial, thus obtaining localized action of the latter. Caution—do not use in extreme flexible flat feet with a very powerful anterior tibial. Too much supination of the front foot may be produced, thus relaxing the peroneus longus, which is essential to the maintenance of front foot pronation.

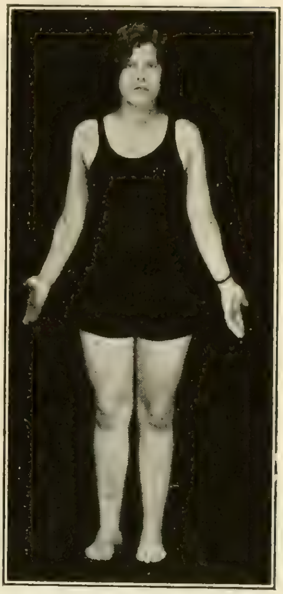

FIGURE 63

Arm Turning Outward with Thigh Rotation Outward

5. Abdomen.

Backward Lying Position. (See Fig. 72, page 304.)

Place soles of feet together, separate knees, bend knees to chest, keeping back flat, keep hips on floor—One! (Have the student count aloud or exhale.) (See Use Open Throat in Al Leg Raising, Chapter XIII, page 118.)

Hold and pull knees to chest, flatten the back and keep hips on the floor—grasp thighs under the knees—Two!

Return to Hook Lying with knees separated, soles of feet together—Three!

Position—Four!

NOTE: Separating the knees, before bending to chest, activates the thigh abductors, thus preventing the adductors from aiding the psoas in tilting the pelvis forward and arching the lower back. (See Straight Leg Raising, Chapter XIII, page 115.)

6. Breathing.

Hook Lying Position.

Breathe in as if smelling a flower—One!

Exhale by blowing out through the mouth as if through a straw—Two!

NOTE: The flower simile is used to do away with the incorrect use of the diaphragm that usually occurs when the emphasis is placed on *Deep* Breathing. Exhaling through the mouth is used to establish a rhythmical and controlled exhalation. (See Correct Breathing, Chapter XII, pages 107, 109.) (See Breathing Exercises, Chapter XVIII.)

7. Lower Back.
   Hook Lying Position. (See Fig. 71, page 304.)
   Contract the abdominal muscles and press the back to the floor—One!
   Relax—Two! (Thomas and Goldthwait.[1])
8. Upper Back (for sequence, see Sequence of Exercises—Upper Back. Introductory Notes, page 245).
   Hook Lying Position.
   Press neck to the floor—One!
   Relax—Two!
   NOTE: Good for forward head, cervical lordosis, round shoulders and round back.

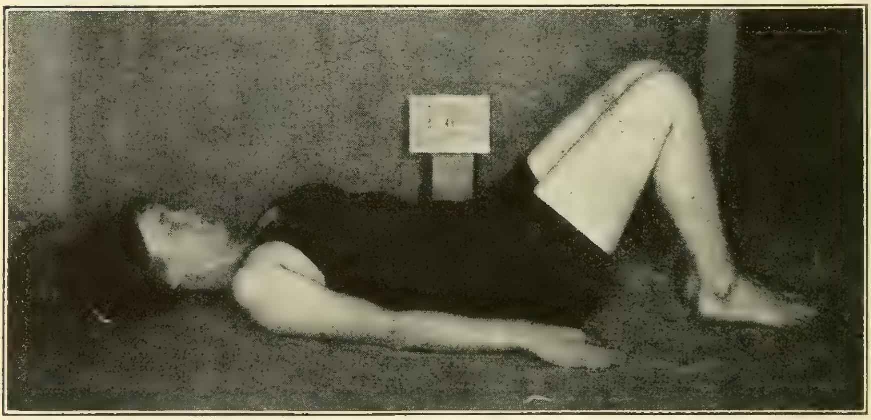

FIGURE 64

Upper Back—Press Neck to Floor

9. Big Muscle Group. (See Fig. 65.)
   Stride Standing Position, Hands on Hips, Toeing in.
   Trunk twisting R.—One! (Twist as far as possible, using leg and trunk muscles.)
   Return—Two!
   Same L.
10. Apparatus—Rotating Schedule.
    a. Stall Bars—General stretching—Body Control.
       1. Standing Position Facing Bars.
          Climbing upward R. foot on first bar, R. hand shoulder high—One!
          L. foot and L. hand one bar higher—Two!

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[1] See Thomas and Goldthwait: "Body Mechanics and Health."

Continue upward R.—Three!
Continue upward L.—Four!
Return 4 counts (given slowly to allow relaxation for passive stretching).

2. Standing Position Facing Bars.
   Climbing upward—4 counts.
   Passive hanging back to bars, hands separated about three feet—8 counts.
   Return—4 counts (given slowly to allow relaxation for passive stretching).

   Note: Passive hanging, back to bar, hands as far apart as possible to prevent stretching of scapular adductors (rhomboids) and to secure maximum stretching of the pectorals.

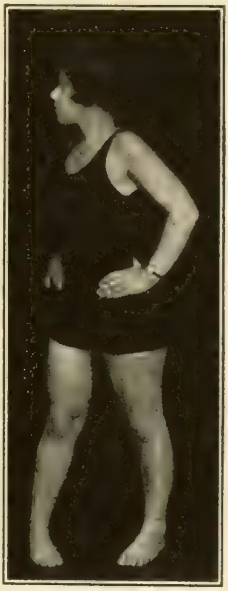

Figure 65

Big Muscle Group—Trunk Twisting Right

b. Tilted Balance Boards—Balance and Passive Correction.

1. Standing Position on Boards, Hands on Hips.
   Bend trunk forward, touch hands to boards if possible—One!
   Return pushing head up—Two!
   Place R. hand on lower abdomen (over symphysis), L. hand in the small of the back (Lumbar Curve), push R. hand up with the front pelvic bone (symphysis pubis), grip the buttocks together—Three!
   Hands on hips—Four!

   Note: Centering the attention on the active tilting of the pelvis activates more definitely the abdominals and influences the flattening of the lumbar curve. (See Pelvis, Chapter VI, page 61. See Pelvic Tilt, Chapter XVIII, page 206.)

2. Standing Position on Boards, Hands on Hips.
   Raise R. leg forward—One!
   Turn foot in (keep back erect)—Two!
   Return—Three!
   Position—Four!
   Same L.

c. Wall—General Posture.

1. Standing Position, Back to the Wall, Heels Four Inches from Wall, Buttocks Touching Wall, Head and Shoulders Relaxed.
   Press lower back to the wall—One!
   Press neck and shoulders to the wall—Two!
   Hold—Three!

Relax—Four!
Repeat.

2. Lean Stand, Facing Wall. Stand Arm's Distance Away, Body Inclined Slightly Forward, Back Flat, Hands on Wall Shoulder High and Shoulder Width Apart, Feet Parallel Two and a Half Feet from Wall.
   Bend elbows slightly—One!
   Drop head forward—Two!
   Raise head, chin in, pinch shoulder blades together—Three!
   Position—Four!

   NOTE: Bending elbows allows shoulder blades to come closer together; keeping back flat activates scapular adductors (rhomboids), while their opponent, the serratus magnus, is slackened.

11. Breathing—Feet.
   Standing Position.
   Arm turning outward, breathe in, with thigh rotation outward (turn knees out, grip buttocks together, twisting thighs outward—keep big toe joints on the floor)—One!
   Return and Exhale—Two!

### SCHEDULE II

1. General Organization.
   1. Facing.
   2. Marching single file around room. Column left by twos.
      Halt in two counts.
      Pigeon toe marching (keep heels down).
      Skipping (toeing forward).
2. Feet—General Posture.
   Standing Position.
   Arm turning outward, breathe in, with thigh rotation outward (turn knees out, grip buttocks together, twisting thighs outward—keep big toe joints on the floor)—One!
   Return—Two!

   NOTE: Centering the attention on the buttocks emphasizes the thigh element. (See External Thigh Rotation, Chapter XIII, page 114.)
3. Head—Upper Back.
   a. Head.
      Cross Sitting Position.
      Head twisting R.—One!
      Return—Two!
      Same L.
   b. Upper Back.
      Cross Sitting Position.

Arms side horizontal, pinch shoulder blades together. (Do not raise or pull back the shoulders. Limit the action to the shoulder blade adductors.)—One!
Turn palms upward (hold shoulder blade position)—Two!
Return (hold shoulder blade position)—Three!
Position—Four!

NOTE: This exercise allows localized action of scapular adductors (rhomboids) by throwing out of action the arm adductors accomplished by activating the arm abductors in arm raising. (See Pinch Shoulder Blades, Chapter XVIII, page 207.)

4. Feet.

Long Sitting Position. (See Fig. 84, page 394.)

R. leg crossed over L., R. foot circling, keeping toes curled—make a circle, starting outward-downward, inward, upward (strong emphasis on in and up movement, none on out and down)—One! Two! Three! Four!
Repeat.
This exercise can be defined as follows, foot circling inward by count.
Toes curled, foot circling, starting out-down—One!
Inward—Two!
Upward (strongly)—Three!
Relax—Four!

NOTE: Strengthening the Tibials and *not* the Gastrocnemius and Peroneals.

5. Abdomen. (See Fig. 70, page 301.)

Hook Lying Position.

Knee raising, hands grasp thighs under knees and pull knees to chest—One! (Have student count aloud or exhale.)
Lower against resistance—Two! (Pupil pushes thighs down to original position against hand resistance—prolonged interval for count to represent time element for resistance.)

NOTE: Arm resistance produces trunk fixation, by activating spinal extensors, thus nullifying tendency of psoas to arch lower back and decreasing possible abdominal strain from fixation of diaphragm.

6. Breathing.

Hook Lying Position.

Breathe in as if smelling a flower—One!
Exhale by blowing out through the mouth as if through a straw—Two!

7. Lower Back.

Hook Lying Position, Arms "T" Position.

Raise head forward, chin in, pressing palms down—One!
Return—Two!

NOTE: Arms "T" Position stretches arm adductor (Pectoralis Major) and shoulder depressor (Pectoralis Minor); Hook Lying, arms "T," furnishes a broad base with fixation points for spinal flexion forward, accomplished by head raising. Head raising forward activates the abdominals in flexing the spine forward, thereby flattening the lower back. Shoulder girdle fixation checks any tendency towards increasing round back or round shoulders. Keep chin in to correct cervical lordosis.

8. Upper Back.
   Prone Lying Position, Hands Under Abdomen, Palms Up.
      Raise head and shoulders, chin in, face three inches from floor—One!
      Return—Two!

NOTE: Fixing hands passively by body weight tends to localize action to upper back and shoulder girdle, strongly relaxing tight pectorals and decreasing tendency to arch lower back.

9. Big Muscle Group.
   Kneeling on One Knee, Hands on Hips.—Kneel on R. Knee, R. Foot Resting in Inversion, L. Knee Right Angle and Straight Forward, L. Foot Toeing In.
      Trunk bending forward—One!
      Return—Two!
      Repeat three times.
      Same L.

NOTE: Good for constipation because pressure of relaxed abdomen on L. thigh massages descending colon, on R. massages ascending colon.

10. Apparatus—Rotating Schedule.
    Repeat Schedule I, Exercise 10, a, b, and c.
11. Breathing—Feet.
    Repeat Schedule I, Exercise 11.

### SCHEDULE III

1. General Organization.
   1. Facing.
   2. Marching, column L. by twos and fours around room.
      Pigeon toe marching (keep heels down).
      Running (toeing forward).
2. Feet—General Posture.
   a. Feet.
      Standing Position with Feet 5 Inches Apart. Take Hands of Student Opposite for Support.

Curl toes, rise on the heels (toe raising)—move front of feet inward until the toes touch, inversion and adduction (keep the body erect and immovable except for the foot movement—do not let the hips (pelvis) sway forward)—One!

Position—Two!

NOTE: In the standing position the inversion and adduction of the front of the foot in the "rising on the heels" position minimizes the general tendency to rotate the leg inward. Taking hands for support is necessary to stabilize the body in order to localize the muscle action.

b. General Posture.

Stride Standing Position, Hands on Head.

Push head and hands up, chin in, stretch spine (stretch upward as tall as possible), contract abdominal muscles, ✓ flatten back—One!

Return—Two!

NOTE: Pushing the head up, chin in, strongly stretching the spine, spinal push up, brings about a correct alignment of head, trunk and hips. (See Spinal Push Up, Chapter XVIII, page 207.) (See Posture Cues, Chapter XIX, page 210.)

3. Head—Upper Back.

a. Head.

Cross Sitting Position.

Drop chin forward (Turkey Gobbler Position)—One!

Strong pull back to Position—Two!

b. Upper Back.

Cross Sitting Position, Arms Side Horizontal, Palms Forward.

Describe small arm circles backward, hands from palm forward to palm upward without tension—One!—Two!—Three!—Four! (Increase the size of circle gradually.) Continue 16 counts.

NOTE: Maximum relaxation of pectorals and subscapulars strongly activating posterior scapulars and external rotators.

4. Feet. (See Fig. 77, page 361.)

Hook Sitting Position with Hand Support, Feet Toeing In.

Arch feet as cat arches back, keeping heels stationary on floor—One!

Relax—Two!

NOTE: Not good for claw feet, contracted feet, or hammer toes.

5. Abdomen. (See Fig. 81, page 386.)

Hook Lying Position, Hands on Neck.

✓ Place soles of feet together, separate knees and raise legs, knees bent and separated (keep hips on floor) with head raising forward (keep hands on floor)—One! (Have student count aloud or exhale.)

Return—Two!

NOTE: Action of longus colli in fixing the neck on the trunk and the abdominals in flexing the spine forward (accomplished by head raising) neutralizes the psoas and prevents arching the lower back.

Shoulder girdle fixation brought about by keeping the hands on the floor checks any tendency to increase round back or round shoulders. (See also note, Schedule II, Exercise 7.)

6. Breathing.

Hook Lying Position.

Breathe in as if smelling a flower—One!

Exhale through mouth as if blowing through a straw—Two!

7. Lower Back.

Hook Lying Position, Arms Side Horizontal, Palms Up.

Keep elbows on floor, raise head forward, chin in—One!

Return head—Two!

NOTE: Activation of rectus abdominis usually lax in hollow back and visceroptosis.

8. Upper Back.

Prone Lying Position, Hands Under Abdomen, Making Fists, Back of Hands on Floor.

Raise head, chin in, face 3 inches from floor—One!

Elbows back, pressing arms to sides—Two!

Return elbows—Three!

Return head to Position—Four!

NOTE: In prone position bowel falls loosely to front and pressure on fists with side pressure of arms has good effect on intestinal action.

9. Big Muscle Group. (See Fig. 66.)

Kneeling on One Knee—Kneel R. Knee, R. Foot Resting in Inversion, L. Knee Right Angle and Straight Forward, L. Foot Toeing In, Arms Folded Across Abdomen Low Down.

Bend trunk forward—One!

Trunk twisting R.—Two!

Return—Three!

Position—Four!

Repeat.

Same L.

NOTE: Greater effect on passive abdomen from trunk rotation against increased pressure. Easy balance from lessened height and broad base; corrective position for feet.

10. Apparatus—Rotating Schedule.

a. Stall Bars—General Stretching—Body Control.

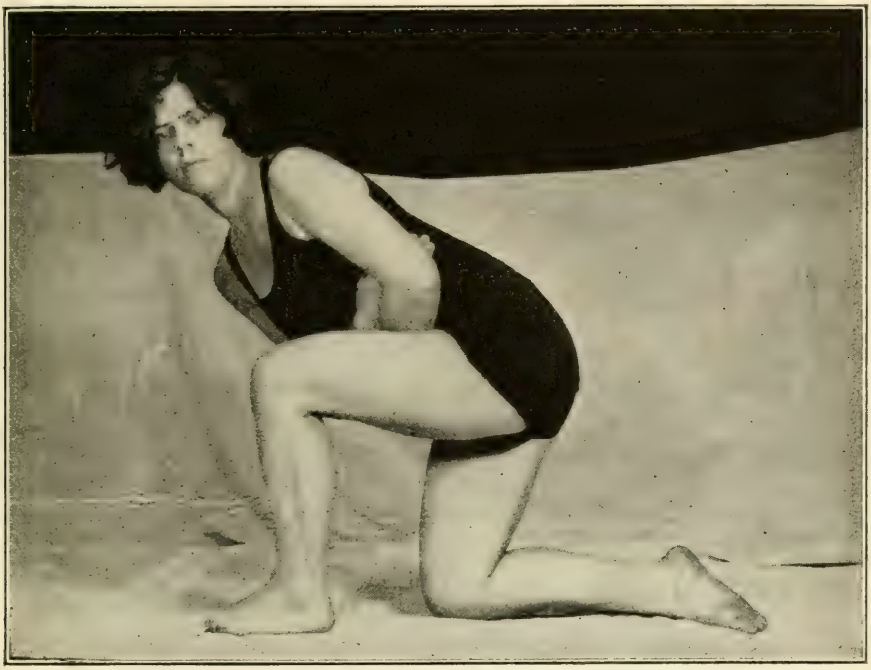

FIGURE 66

Big Muscle Group—Trunk Bending Forward—Twist L.

1. Standing Position, Facing Bars.
   R. foot on first bar, L. hand shoulder high—One!
   L. foot and R. hand one bar higher—Two!
   Continue upward R.—Three!
   Continue upward L.—Four!
   Return 4 counts (given slowly to allow relaxation for passive stretching).
2. Standing Position, Facing Bars.
   Climbing upward, alternate hand and foot—4 counts.
   Passive hanging, back to bars, hands about 3 feet apart—8 counts.
   Return—4 counts (given slowly to allow relaxation for passive stretching).

b. Tilted Balance Boards—Balance and Passive Correction.

1. Standing Position on Boards, Hands on Hips.
   Drop head forward—One!
   Raise head and pull chin in—Two!
   Arm stretching downward and rotate outward—Three!
   Hands on hips—Four!
   Repeat.

2. Standing Position on Boards, Hands on Hips.
   Bend R. knee upward—One!
   Leg stretching forward, turn foot in, keep back erect—Two!
   Return—Three!
   Position—Four!
   Same L.

e. Wall—General Posture.

1. Standing Position, Back Against Wall, Feet Four Inches from the Wall, Toeing In, Knees Slightly Bent.
   Relax shoulders and upper trunk forward until the lower back is in contact with wall. Contract the abdominal muscles, grip the buttocks and raise the trunk, flatten entire back against the wall—One!
   Hold—Two!
2. Lean Stand, Facing Wall. Stand Arm's Distance Away, Body Inclined Slightly Forward, Back Flat, Place Hands on Wall Shoulder High and Shoulder Width Apart. Feet Toeing In, about Two and a Half Feet from Wall. Elbows Slightly Bent, Head Erect.
   Step forward to wall with R. foot, toe in (L. heel remains on floor)—One!
   L. forward—Two!
   R. foot back (heel touching floor)—Three!
   Return L.—Four!
   Repeat.

   NOTE: Gives stretch to shortened heel cords; "in-toe" position prevents stretching of plantar structures.

11. Breathing—Feet.
    Repeat Schedule I, Exercise 11.

### SCHEDULE IV

1. General Organization.
   1. Facing.
   2. Marching—Line Marching—To the Rear, March, in three counts, stopping on first count.
      Pigeon toe marching (keep heels down).
      Pigeon toe running in place, 16 counts.
2. Feet—General Posture.
   Standing Position, Heels Apart, Toes Together.
   Grip buttocks together—One!
   Slide heels together vs. floor resistance—Two!
   Step forward R. to "toe-in" Position—Three!
   L. to "toe-in" Position—Four!
   Same L.

NOTE: Gripping the buttocks together aids in tilting pelvis backward and in flattening lower abdomen.

3. Head—Upper Back.
   a. Head.
      Cross Sitting Position.
      Drop head forward—One!
      Push head back vs. imaginary resistance—Two! (Prolong interval for count to represent time element for resistance.)
   b. Upper Back.
      Cross Sitting Position.
      Pinch shoulder blades together—One!
      Arm raising forward—Two! (Hold shoulder blade position.)
      Arms sideward, palms down—Three! (Hold shoulder blade position.)
      Position—Four!

      NOTE: See Note Schedule II, Exercise 3b. Arms forward should be given only if "shoulder blade pinch" can be held.

4. Feet.
   Backward Lying Position, Heels Apart, Toes Together.
   Grip buttocks together, rotate thighs outward until heels touch, keeping toes together—One!
   Hold—Two!
   Raise legs slightly—Three!
   Return to starting position, heels apart, toes together—Four!

   NOTE: Raising legs before returning to the starting position activates the leg abductors and eliminates the necessity of using internal thigh rotators vs. floor resistance. Placing the leg in internal rotation at the start gives complete range of pull for the external rotators.

5. Abdomen.
   Hook Lying Position, Arms Reverse "T." (See Fig. 46, page 188.)
   Place soles of feet together, separate knees—One!
   Raise legs, knees bent and separated, to chest (keep hips on floor) with head raising forward (keep arms on floor)—Two! (Have student count aloud or exhale.) (See Fig. 81, page 386.)
   Return knees—Three!
   Return head—Four!

   NOTE: Arms reverse "T" position activates posterior deltoids and posterior scapulars (infraspinatus, teres minor, rhomboids, latissimus dorsi). See notes previous abdominal and lower back exercises.

6. Breathing.

   Hook Lying Position.

   Breathe in as if smelling a flower—One!

   Exhale through the mouth as if blowing through a straw—Two!

7. Lower Back.

   1. Hook Lying Position, Knees and Feet Wide Apart, Arms "T" Position.

      Arms vertical, clasp hands above head—One!
      Trunk rolling R.—Two!
      Return—Three!
      Position—Four!
      Same L.

      Note: Knees and feet wide apart to stabilize base for trunk rolling.

   2. Prone Lying Position.

      Bend knees, touch feet to buttocks, grasp feet with hands and press legs against buttocks—One!
      Return—Two!

      Note: To stretch the psoas magnus. If the exercise seems to exaggerate hollow back condition, contract the abdominal muscles first to control the tilt of the pelvis. When it is possible in this exercise, use pillow under abdomen.

8. Upper Back.

   Prone Lying Position, Hands Under Upper Abdomen, Heels Apart, Toes Touching.

   Raise head, chin in, face 3 inches from floor, pressing elbows to sides, grip buttocks, rotating thighs until heels touch—One!
   Relax—Two!

9. Big Muscle Group.

   Mimetic—Pitching.

   Stride Standing Position, Ball in R. Hand, L. Shoulder Facing Forward.

   Swing R. arm back with the ball, elbow slightly bent, upper arm parallel to shoulder, weight on the R. foot—One!
   Let the arm swing forward, keep upper arm in horizontal position (approximately), snapping arm to complete extension at the finish, step forward L., weight on L. foot—Two!
   Return to starting position—Three!
   Repeat.

10. Apparatus—Rotating Schedule.

    Repeat Schedule III, Exercise 10, a, b, c.

11. Breathing—Feet.

    Repeat Schedule I, Exercise 11.

### SCHEDULE V

1. General Organization.
    a. Facing.
    b. Marching—Line Marching—to the rear, March! (in three counts), not stopping on first count, in rhythm.
    Chain step L.—Chain step R.
    Pigeon toe marching sideward R. (keep heels down).
    Same L.
    Pigeon toe running, advancing.

2. Feet—General Posture.
    Standing Position, Feet Together (close).
        Slight knee bending with thigh rotation outward (keeping back straight)—One!
        Return—Two!

3. Head—Upper Back.
    Kneeling, both knees, Feet Apart, Toes in, Hands on Neck, Drop Head Forward, Elbows to Abdomen—One!
    Return to erect position, hands resisting (elbows in line with shoulder at end of movement)—Two!

4. Feet.
    Hook Lying Position.
        Curl toes—One!
        Turn soles of feet toward each other (keep heels stationary on floor)—Two! (See Fig. 67, page 271.)
        Balls to floor (keep toes curled)—Three!
        Relax—Four!

        NOTE: Replacing balls of feet to floor with heels firm and toes curled activates the depressor of the front part of the foot (peroneus longus), thus improving the condition of the front support of the anterior arch.

5. Abdomen.
    Hook Lying Position, Arms Vertical.
        Place soles of feet together, separate knees—One!
        Raise legs, knees bent and separated, to chest (keep hips on floor) with head raising (keep arms on floor)—Two! (Have student count aloud or exhale).
        Return knees—Three!
        Return head—Four!

6. Breathing.
    Hook Lying Position.
        Breathe in as though smelling a flower—One!
        Exhale through the mouth as if blowing through a straw—Two!

7. Lower Back.
    Hook Lying Position.
        R. hand on abdomen, L. hand in small of back, contract abdominal muscles, press abdomen down and flatten back to floor—One!
        Relax—Two!
8. Upper Back.
    Prone Lying Position, Hands Under Abdomen, Heels Apart, Toes Touching.
        Raise head, chin in, face 3 inches from floor—One!
        Press elbows to sides—Two!
        Grip buttocks, rotating thighs outward until heels touch—Three!
        Relax—Four!
            Note: Difficulty of head exercise increased by holding the head during the four counts.
9. Big Muscle Group.
    Mimetic—Archery.
        Stride Standing Position, Arms Forward Bend, Hands Closed.
            Extend bow arm (L.) sideward, grasp cord with R., turning head to L.—One!
            Pull and shoot—Two!
            Starting Position—Three!
            Same R.
10. Apparatus—Rotating Schedule.
    a. Stall Bars—General Stretching—Body Control.
        1. Standing Position, Facing Bars.
            Climbing upward, R. foot on first bar, L. hand shoulder high—One!
            L. foot and R. hand one bar higher—Two!
            Continue upward R.—Three!
            Continue upward L.—Four!
            Passive hanging, back to bar—8 counts.
            Return—4 counts.
        2. Standing Position, Facing Bars.
            Climbing upward (as in 1)—4 counts.
            Hang, back to bar, swing to R. and L.—8 counts (get as much range of motion as possible at waist line).
            Return—4 counts.
    b. Tilted Balance Boards—Balance and Passive Correction.
        1. Standing Position on Boards, Arms Bend.
            Bend head sideward R. (bring ear to shoulder)—One!
            Return—Two!
            Arm stretching sideward—Three!
            Return—Four!
            Same L.

2. Standing Position on Boards, Hands on Hips.
   Raise R. leg sideward—One!
   Return—Two!
   Same L.

c. Wall—General Postural.

1. Standing Position with Heels Four Inches from Wall, Buttocks, Shoulders and Head Touching Wall, Lower Back Flattened.
   Press tips of fingers to wall pushing body forward to standing position—One!
   Thigh rotation outward with hand turning outward—Two!
   Return—Three!
   Position with buttocks, shoulders and head touching wall—Four!
2. Standing Position with Heels Four Inches from Wall, Buttocks, Shoulders and Head Touching Wall, Hands on Hips.
   Trunk bending R.—One! (shoulders and head sliding over the wall to control erect position).
   Return—Two!
   Same L.

11. Breathing—Feet.
    Repeat Schedule I, Exercise 11.

### SCHEDULE VI

1. General Organization.
   a. Facing. Facing combined with one step forward and one step backward.
   b. Marching. Line marching. Marching to the rear in three counts in rhythm.
   Class to rear, halt!
   Polka step L. and R.
   Pigeon toe marching, cross step; step R., cross L. in front, step R. heels together. (Keep heels down.)
   Same L.
2. Feet—General Posture.
   Stride Standing Position, Feet Toeing In, Hands on Top of Head.
   Push head and hands up, chin in, stretch spine (stretch upward as tall as possbile), contract abdominal muscles, flatten back—One!
   Position—Two!
3. Head—Upper Back.
   Cross Sitting Position.
   Head rotation R. (Make the head go in a complete circle,

starting forward, side, back and forward again.) Keep trunk and shoulders immovable, upper back flat—One! Two! Three! Four!

Same L.

4. Upper Back—Feet.

Hook Sitting Position, Soles of Feet Touching, Arms Folded Behind Back.

Drop head and trunk forward—One!

Return to position against resistance of the arms—Two!

NOTE: Obtains passive stretching of the peroneals and external thigh rotators; allows resistance to trunk backward movement without possibility of arching the back.

5. Abdomen.

Hook Lying Position.

Place soles of feet together, separate knees—One!

Raise legs, soles of feet pressed together—Two! (Have student count aloud or exhale.)

Return—Three!

Position—Four!

NOTE: See Note, Schedule I, Exercise 5. Also adding the foot factor brings into play the external thigh rotators.

6. Breathing.

Hook Lying Position.

Breathe as though smelling a flower—One!

Exhale through the mouth as if blowing through a straw—Two!

7. Lower Back.

Cross Sitting Position, Hands on Hips.

Bend trunk R.—One!

Return—Two!

Same L.

8. Upper Back.

Prone Lying Position, Hands Under Abdomen, Heels Apart, Toes Touching.

Grip buttocks, rotating thighs outward until heels touch—One!

Press elbows to sides—Two!

Raise head, chin in, face 3 inches from floor—Three!

Position—Four!

NOTE: Powerful anti-gravity movement, difficulty increased by holding thigh rotators throughout the exercise.

9. Big Muscle Group.

Mimetic—Rowing.

Forward Charge R., Arms Extended Diagonally Forward Downward with Fists Clenched.

Change weight to L. leg and carry fists forcibly back until in an arm bend position—One!
Sway forward and again bend R. knee and move arms forward downward—Two!
Repeat.
Same L.

10. Apparatus—Rotating Schedule.
    Repeat Schedule V, Exercises 10, a, b, c.
11. Breathing—Feet.
    Repeat Schedule I, Exercise 11.

### SCHEDULE VII

1. General Organization.
   a. Facing. Facing combined with march steps forward, backward and sideward.
   b. Marching. Review columns Left and Right by twos and fours. Review line marching. Review to the rear—March, and Class to the rear—Halt!
   Polka step with knee upward bending.
   Pigeon toe marching (keep heels down).
2. Feet—General Posture.
   Standing Position.
   Arms side horizontal, jump to stride stand, feet toeing in—One!
   Place hands on top of head, push head and hands up, chin in, stretch spine (stretch upward as tall as possible), contract abdominal muscles, flatten back (keep heels on floor)—Two!
   Return—Three!
   Position—Four!
3. Head—Upper Back.
   Cross Sitting Position—By Twos Facing Each Other, Soles of Own Feet Touching, Grasp Partner's Hands.
   No. 1 drops head and trunk forward—One!
   Return to position vs. partner's resistance—Two!
   Reverse and repeat.
   NOTE: See Note, Schedule VI, Exercise 4.
4. Feet. (See Fig. 83, page 393.)
   Long Sitting Position.
   Soles of feet touching, bend ankles upward—One!
   Relax—Two!
   NOTE: See Note, Schedule I, Exercise 4.
5. Abdomen.
   Hook Lying Position—Arms "T" Position, Soles of Feet Together.

Raise legs to chest, soles pressed together (keep hips on floor)—One! (Have student count aloud or exhale.)
Raise head (keep arms on floor)—Two!
Return head—Three!
Position—Four!

6. Breathing.
    Hook Lying Position.
        Breathe in as if smelling a flower—One!
        Exhale by blowing out through the mouth as if through a straw—Two!
7. Lower Back.
    Cross Sitting Position.
        Place hands on top of head—One!
        Bend trunk R. (keep elbows well back)—Two!
        Return (keep elbows well back)—Three!
        Position—Four!
        Same L.
8. Upper Back.
    Prone Lying Position, Hands Under Abdomen, Heels Apart, Toes Touching.
        Grip buttocks, rotating thighs outward until heels touch, press elbows to sides, raise head, chin in, face 3 inches from the floor—One!
        Hold—Two!—Three!
        Relax—Four!

        NOTE: Powerful anti-gravity movement; the difficulty is increased by holding the head and thigh rotators throughout the exercise.
9. Big Muscle Group.
    Mimetic—Hockey Drive.[1]
        Stride Standing Position (Feet Parallel and Apart—Fourteen-Eighteen Inches). "The hands are close together at the top of the handle, left hand above the R. The body is almost erect and the hit is usually made with the left foot and left shoulder in advance, *i.e.*, in the direction of the hit. At the beginning of the stroke, when the stick is back, the body weight is on the R. foot." Assume position described above with elbows out, allowing freedom of movement.
            Move the arms across the front of the body until the R. arm is bent at a right angle—One!
            Swing arms back across body and hit the ball when it is close to and slightly in front of the player, shifting the weight to the L. foot, finishing with L. arm at right angle (keep wrists straight throughout)—Two!
            Repeat.

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[1] Frost and Cubberley: "Field Hockey and Soccer for Women," p. 10.

10. Apparatus—Rotating Schedule.
    a. Stall Bars—General Stretching—Body Control.
        1. Standing Position, Back to Bars.

           Climbing upward, R. foot on first bar, R. hand grasp high—One!
           L. foot and L. hand one bar higher—Two!
           Return—Two counts.
           Repeat.
        2. Hanging, Back to Bars, Both Feet on Bottom Bar, Both Hands Grasp High.

           Release R. foot from bar and let R. leg hang free and close to the bar—One!
           Same L.—Two!
           Hip raising replace R. foot—Three!
           Same L.—Four!
           Repeat three times.

           NOTE: Hip raising in hanging position activates the Quadratus Lumborum and side abdominals.
    b. Tilted Balance Boards—Balance and Passive Correction.
        1. Standing Position on Boards, Hands on Hips.

           Drop chin forward (turkey gobbler) in an awkward position—One!
           Return, pulling chin in and pushing up on the top of head—Two!
           Repeat three times.
        2. Standing Position on Boards.

           Arms side horizontal, palms forward—One!
           Hands on neck, knee bending (keep heels on board)—Two!
           Return—Three!
           Position—Four!
           Repeat.
    c. Wall—General Postural.
        1. Standing Position with Heels Four Inches from Wall, Buttocks, Shoulders and Head Touching Wall, Lower Back Flattened.

           Rotate thighs outward—One!
           Slight knee bending (¼ bend)—Two! (Go down as far as possible with back flat to stretch tendo Achillis.)
           Return—Three!
           Position—Four!
           Repeat.
        2. Standing Position, with Heels Four Inches from Wall, Buttocks, Shoulders and Head Touching Wall, Lower Back Flattened, Hands on Neck.

           Arm bending, keeping back flat—One!

Sway forward into upright position, keeping pelvis immovable and abdominal muscles contracted—Two!
Return—Three!
Position—Four!
Repeat.

11. Breathing—Feet.
    Repeat Schedule I, Exercise 11.

### SCHEDULE VIII

1. General Organization.
   a. Facing. Facing combined with march steps.
   b. Marching. Line marching. Review to the rear—March, and Class to the rear—Halt! By the L. and R. flank—March!
   Polka step outside foot, face partner, inside foot back to partner.
   Pigeon toe marching (keep heels down).
2. Feet—General Posture.
   Standing Position, Hands on Hips.
   Thigh rotation outward—One!
   Charge forward R., toeing forward (keep body in line with rear leg to stretch tendo Achillis and Hamstrings)—Two!
   Return—Three!
   Position—Four!
   Same L.
   Note: To stretch tendo Achillis and Hamstrings.
3. Head—Upper Back.
   Cross Sitting Position, Hands on Hips.
   Hands on neck, twist trunk to R. (keep elbows well back)—One!
   Bend trunk forward over R. knee (keep elbows well back)—Two!
   Return (keep elbows well back)—Three!
   Position—Four!
   Same L.
4. Feet.
   Long Sitting Position.
   R. leg crossed over L., R. foot rotation, keeping toes curled—One! Two! Three! Four!
   Repeat—One! Two! Three! Four!
   Same L.
   Note: See Schedule II, Exercise 4.
5. Abdomen.
   Backward Lying, Arms "T" Position, Soles of Feet Together.
   Raise legs, knees apart, soles of feet pressed together (keep hips on floor)—One! (Have student count aloud or exhale.)
   Raise head (keep arms on floor)—Two!

Return head—Three!
Position (keeping soles together)—Four!

6. Breathing.
   Backward Lying Position.
   Arms side horizontal, palms up, breathe in—One!
   Return and exhale—Two!

7. Lower Back.
   1. Cross Sitting Position, Hands on Head.
      Twist trunk to R. (keep elbows well back)—One!
      Bend trunk to L., elbow to L. knee (keep elbows well back)—Two!
      Bend trunk to R. (as far as possible)—Three!
      Position—Four!
      Same L.
   2. Prone Lying Position, Hands under Abdomen.
      Keep pelvis and shoulders down, press hands upward and hump up the back—One!
      Return—Two!

      NOTE: To stretch the psoas magnus; humping up the back shortens the abdominals and prevents the thigh flexors from acting.

8. Upper Back.
   Prone Lying Position, Hands under Abdomen, Heels Apart, Toes Touching.
   Grip buttocks, rotating thighs outward until heels touch, press elbows to sides, raise head, chin in, face 3 inches from floor—One!
   Hold—Two! Three!
   Relax—Four!

9. Big Muscle Group.
   Mimetic—Bicycling.
   Hook Lying, Arms to Diagonal.
   Bend R. knee to chest (let thigh rest on abdomen)—One!
   Extend R. knee forcibly, pushing foot up (at end of push bend ankle toward body, as R. leg extends allow L. knee to bend)—Two!
   Continue alternately and rhythmically, starting slowly, make strongest effort on upward thrust of heel, opposite leg relaxed in the downward movement.
   Continue 16 counts.

10. Apparatus—Rotating Schedule.
    Repeat Schedule VII, Exercise 10, a, b and c.

11. Breathing—Feet.
    Repeat Schedule I. Exercise 11.

### SCHEDULE IX

1. General Organization.
   1. Facing. Facing and march steps.
   2. Marching. Line marching. Review by the L. and R. flank March!

      Review column L. by twos.

      Polka step outside foot, face partner, inside foot, back to partner and repeat; face partner, both hands joined, 8 slides. Polka step inside foot, back to partner, outside foot, face partner and repeat.

      Repeat 8 slides with back to partner, one hand joined.

2. Feet—General Posture.

   a. Feet.

   Standing Position.

   Place R. foot sideward ½ step, toe in—One!
   Place L. foot sideward ½ step, toe in—Two!
   Return R. foot—Three!
   Return L. foot—Four!
   Repeat.

   b. General Posture.

   Standing Position.

   Arms bend, place R. foot sideward—One!
   Stretch arms to Tall Walk, push head up, chin in, stretch spine, stretch upward as tall as possible, keep heels on floor—Two!
   Return—Three!
   Position—Four!
   Same L.

   NOTE: Do not bring arms farther back towards vertical because of tendency to cause hollow back. This is prone to occur in round shoulders and round back in which instances the pectorals are tight and lift the rib cage forward, resulting in increasing the compensatory curve in the lower back.

3. Head—Upper Back.

   Hook Sitting Position, Soles of Feet Together.

   Hands on neck, bend trunk forward, press soles of feet together—One!
   Twist trunk to R., with elbows well back, press soles of feet together—Two!
   Return—Three!
   Position—Four!
   Same L.

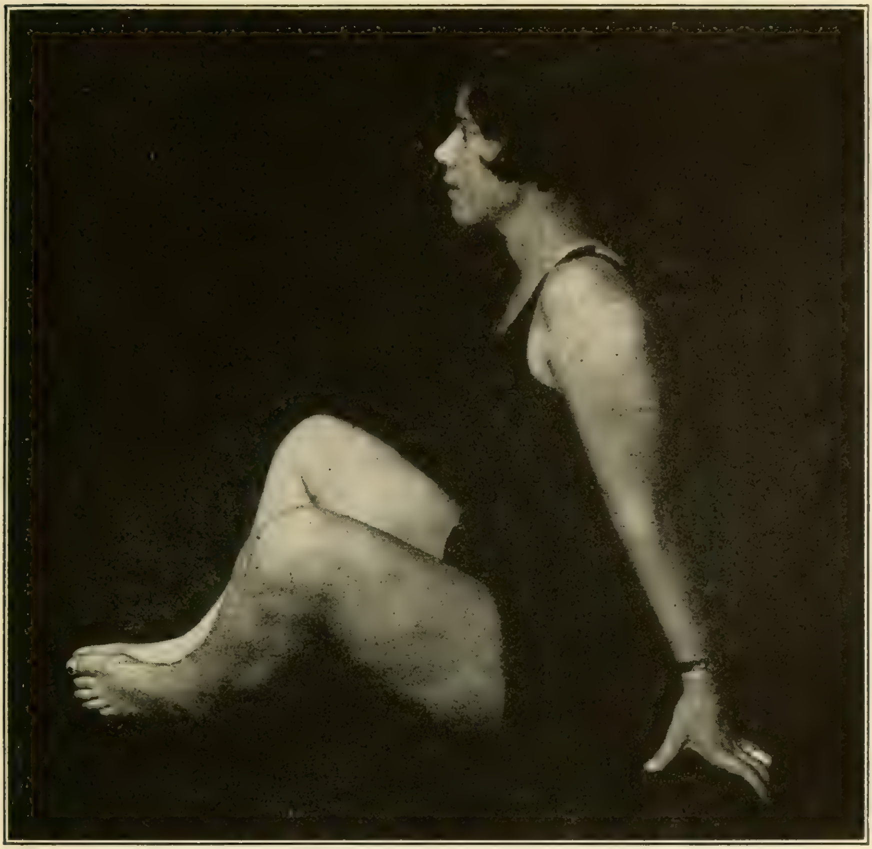

FIGURE 67

Feet—Curl Toes, Place Soles of Feet Together

4. Feet.

   Hook Sitting Position.

   Curl toes, place soles of feet together—One!
   Press soles of feet together—Two! Three!
   Position—Four!

5. Abdomen.

   Backward Lying Position, Arms "T" Position, Soles of Feet Together.

   Raise head (keep arms on floor)—One!
   Raise legs, knees separated, soles of feet pressed together (keep hips on floor)—Two! (Have student count aloud or exhale.)
   Return legs—Three!
   Position—Four!

6. Breathing.
   Backward Lying Position.
      Arms turning outward, breathe in, with thigh rotation outward—One!
      Return and exhale—Two!

7. Lower Back.
   Cross Sitting Position, Arms Vertical, Hands Clasped.
      Twist trunk R.—One!
      Bend trunk to R. knee (head in line with trunk)—Two!
      Return—Three!
      Position—Four!
      Same L.

8. Upper Back.
   Prone Lying Position, Fists under Abdomen.
      Leg separation—One! (Complete abduction.)
      Raise head, chin in, face 3 inches from floor—Two!
      Return head—Three!
      Position—Four!

9. Big Muscle Group.
   Mimetic—Canoeing.
      Kneeling on One Knee, Starting L. Grasp End of Paddle with R. Hand, L. Hand Low on Paddle.
         Twist body, moving arms backward downward L.—One!
         Feather paddle by bringing L. arm up shoulder high and forward, R. arm in front of R. shoulder, trunk facing forward—Two!
         Repeat.
         Reverse and repeat.

10. Apparatus—Rotating Schedule.
   a. Stall Bars—General Stretching—Body Control.
      1. Side Hang Stand Position, R. Side to Bar, R. Hand Grasp Low, L. Hand High, Feet at Least a Foot and a Half from Bar, Feet Together and Toeing Forward.
         Contract abdominal muscles and flatten back—One!
         Raise L. leg sideward—Two!
         Return—Three!
         Position—Four!
         Repeat.
         Same L.

         NOTE: Trunk fixation laterally secured by hand grasp; lower trunk fixation, anteroposteriorly by abdominal tension; leg raising gives localized action of Quadratus Lumborum and lateral abdominals.

2. Side Hang Stand Position, R.
    Raise L. leg sideward—One!
    Bend knee, toe in, foot to R. thigh—Two!
    Return—Three!
    Position—Four!
    Repeat.
    Same L.

b. Tilted Balance Boards—Balance and Passive Correction.
1. Standing Position on Boards.
    Clasp hands in rear and hold—One!
    Head bending sideward R.—Two! (Bring ear to shoulder.)
    Return—Three!
    Position—Four!
    Same L.

2. Standing Position, Hands on Neck.
    Bend trunk sideward R.—One!
    Return—Two!
    Stretch arms upward—Three!
    Position—Four!

c. Wall—General Posture.
1. Standing Position, Back to Wall, Heels Four Inches from Wall.
    Arm turning outward, pinch shoulder blades together (press hands to wall)—One!
    Arms side horizontal, palms forward (hold shoulder blade position and hands pressed to wall)—Two!
    Return—Three!
    Position—Four!
    Repeat.

2. Standing Position, Back to Wall, Heels Four Inches from Wall, Buttocks, Shoulders and Head Touching Wall, Lower Back Flattened, Hands on Hips.
    Sway forward into upright position by elbows thrust vs. wall, keeping pelvis immovable and abdominal muscles contracted—One!
    Raise R. leg sideward—Two!
    Return—Three!
    Position (on wall)—Four!
    Same L.

11. Breathing—Feet.
    Repeat Schedule I, Exercise 11.

### SCHEDULE X

1. General Organization.
   1. Facing—Facing and march steps.
   2. Marching—Line marching. L. about march in three counts, stopping on the first count. Review Column L. and R. by twos. Polka step outside foot, face partner, inside foot, back to partner and repeat; face partner, both hands joined, 8 slides. Polka step inside foot, back to partner, outside foot, face partner and repeat. Repeat 8 slides with back to partner, one hand joined.
2. Feet—General Posture.

   Standing Position.

   Arms side horizontal, place R. foot sideward—One!  
   Arm rotation outward, turning palms up and thigh rotation outward—Two!  
   Return—Three!  
   Position—Four!  
   Same L.
3. Head—Upper Back.

   Cross Sitting Position, Hands on Neck.

   Pinch shoulder blades together (do not raise or pull back the shoulders)—One!  
   Elbows forward (hold shoulder blade position)—Two!  
   Extend arms forward (hold shoulder blade position)—Three!  
   Position—Four!

   NOTE: ''Arms forward'' should be given only if shoulder blade pinch can be held.
4. Feet.

   Cross Sitting Position, R. leg crossed over L.

   Curl toes R.—One!  
   Draw toes of R. foot toward L. knee—Two! (See Fig. 80, p. 371.)  
   Relax—Three!  
   Same L.
5. Abdomen.

   Hook Sitting Position, Hands on Hips, Soles of Feet Together.

   Trunk circling, starting to R., bend trunk to R.—One!  
   Trunk bending forward—Two!  
   Trunk bending L.—Three!  
   Position (Pushing up on top of head)—Four!  
   Same L.
6. Breathing.

   Cross Sitting Position.

   Arm turning outward, breathe in—One!  
   Return and Exhale—Two!

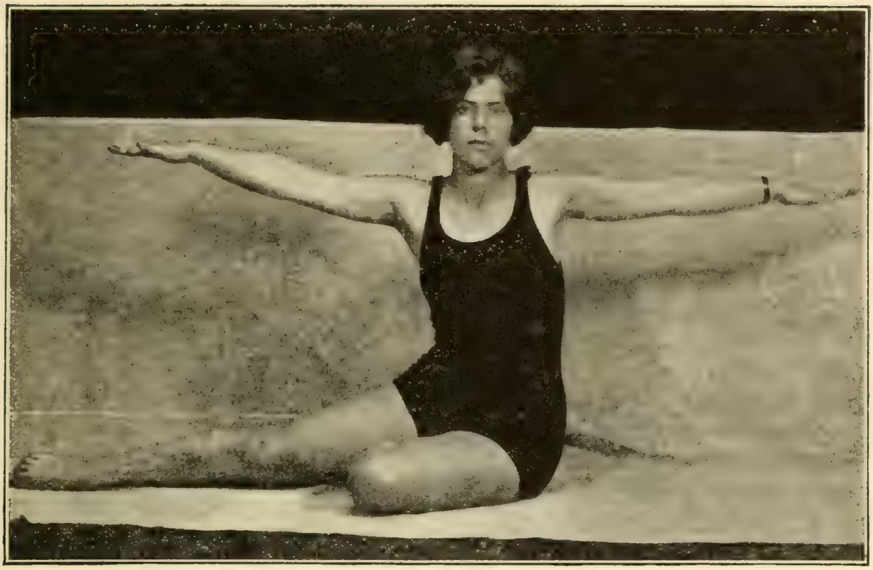

FIGURE 68

Lower Back—Raise Trunk R., Arms Side Horizontal from Half Side Lying (L) Position

7. Lower Back.

Cross Sitting Position.

Move legs sideward, straighten L. sideward, place R. leg under L., R. knee bent (L. leg crossing R. leg half way between knee and ankle), place R. hand on floor two feet to R., R. hand and trunk in line with L. leg, L. hand on hip—One!

Raise trunk to L., arms side horizontal—Two! (Keep hips in line with L. leg, L. arm and leg parallel.)

Return—Three!

Position—Four!

Repeat.

Same L.

NOTE: To strengthen Quadratus Lumborum and side abdominals. Passive pressure on opposite thigh and pelvis, good in obesity. Caution, not good in cases with loose or weak Sacroiliac joints.

8. Upper Back.

Prone Lying Position, Fists Under Abdomen, Back of Hand on Floor.

Raise head, chin in, face 3 inches from floor—One!

Leg separation—Two!

Return—Three!

Position—Four!

NOTE: See Note, Schedule V, Exercise 8.

9. Big Muscle Group.
   Mimetic—Back Stroke Swimming.
      Backward Lying Position.
         Place the soles of the feet together. Simultaneously draw the feet toward the body and draw hands along the sides to under arm position (hold the knees outward and as near the floor as possible)—One!
         Extend arms sideward, little finger to floor, a little above side horizontal, and extend legs (legs will now be diagonally outward and on floor)—Two!
         Arms at sides, feet together—Three!
         Hold—Four!
         Repeat.
10. Apparatus—Rotating Schedule.
   Repeat Schedule IX, Exercise 10, a, b and c.
11. Breathing—Feet.
   Repeat Schedule I, Exercise 11.

### SCHEDULE XI

1. General Organization.
   1. Facing—Facing and march steps.
   2. Marching—Line Marching. L. about march in three counts, not stopping on first count. Review column L. and R. by twos. Heel and toe, starting R. heel forward, toe back, chain step R. Same L. Repeat heel and toe with polka and schottische steps.
2. Feet—General Posture.
   Standing Position.
      Bend arms forward, place R. foot sideward—One!
      Arm flinging sideward, palms upward with thigh rotation outward—Two!
      Return—Three!
      Position—Four!
      Same L.
3. Head—Upper Back.
   Cross Sitting Position, Hands on Hips.
      Bend trunk forward, bring arms to arm bend position—One!
      Arm stretching backward, palms forward—Two!
      Return—Three!
      Position—Four!
4. Feet (see Fig. 88, page 398).
   Backward Lying Position, Knees Separated and Bent to Chest.
      Straighten both legs upward, steady thighs with hands, curl toes and bend ankles toward body—One!

Hold, stretch—Two! Three!
Position—Four!
Note: To stretch tendo Achillis.

5. Abdomen.
   Hook Sitting Position, Soles of Feet Together, Hands on Knees.
   Relax trunk and head forward—One!
   Push to upright position as against resistance, chin in, shoulder blades together—Two!
6. Breathing.
   Cross Sitting Position.
   Breathe in as if smelling a flower—One!
   Exhale through the mouth as if blowing through a straw—Two!
7. Lower Back.
   Half Side Lying Position, Supporting Knee Bent, Upper Hand on Hip.
   Half side lying R., L. hand on hip, raise leg forward—One!
   L. leg backward—Two!
   Return—Three!
   Position—Four!
   Repeat.
   Same L.
   Note: Gravity load falls on the abductors and side trunk fixators and not on the thigh flexors. See caution in Schedule X, Exercise 7.
8. Upper Back.
   Prone Lying Position, Fists Under Abdomen, Legs Separated.
   Raise head, chin in, face 3 inches from the floor—One!
   Bend knees, touch feet to buttocks—Two!
   Return—Three!
   Position—Four!
   Note: See Note, Schedule V, Exercise 8.
9. Big Muscle Group.
   Mimetic—Chest Throw Basket Ball.
   Standing Position.
   Hold the ball in front of the chest with both hands, elbows fully bent close to the body, place L. foot forward, knees slightly bent, weight forward on balls of feet—One!
   Throw the ball with a quick extension of the arms and body, jumping into the air—Two!
   Repeat.
10. Apparatus—Rotating Schedule.
    a. Stall Bars—General Stretching—Body Control.
       1. Standing Position, Facing Bars.
          Climbing upward, alternate hand and foot—4 counts.
          Passive hanging, back to bars, hands about 3 feet apart, —8 counts.

Return—4 counts (given slowly to allow relaxation for passive stretching).

2. Standing Position, Facing Bars.
   Climbing upward, alternate hand and foot—4 counts.
   Passive hanging, back to bars, hands about 3 feet apart, contract abdominal muscles, flatten back—One!
   Hold—Two!
   Thigh rotation outward—Three!
   Return—Four!
   Repeat.
   Return 4 counts.

b. Tilted Balance Boards—Balance and Passive Correction.
   1. Standing Position on Boards, Arms Bend.
      Stretch R. arm upward, palm inward, L. arm side horizontal, palm forward—One!
      Reverse arm position—Two!
      Reverse arm position—Three!
      Position (arms bend)—Four!
      Repeat.
      Same L.
   2. Standing Position on Boards, Hands on Hips.
      Touch R. heel forward—One!
      Raise R leg—Two!
      Touch R. heel forward—Three!
      Position—Four!
      Same L.

c. Wall—General Posture.
   1. Standing Position, Back to Wall, Heels Four Inches from Wall, Buttocks, Shoulders and Head touching Wall, Lower Back Flattened.
      Arm turning outward, pinch shoulder blades together (press hands to wall)—One!
      Arms side horizontal, palms forward (hold shoulder blade position and hands pressed to wall)—Two!
      Return—Three!
      Position—Four!
      Repeat.
   2. Standing Position, Back to Wall, Heels Four Inches from Wall, Buttocks, Shoulders and Head Touching Wall, Lower Back Flattened, Hands on Hips.
      Sway forward into upright position by elbows thrust against wall, keeping pelvis immovable and abdominal muscles contracted—One!
      Step forward L.—Two!
      Step forward R.—Three!
      Heels together—Four!

Step backward L.—One!
Step backward R.—Two!
Heels together—Three!
Position—Four!
Repeat.

11. Breathing—Feet.
    Repeat Schedule I, Exercise 11.

### SCHEDULE XII

1. General Organization.
    1. Facing—Facing and march steps.
    2. Marching—Line marching. Review L. about march. Class L. about halt. Review Column L. by twos. Slide hop R., lifting L. foot rear. Same L. Repeat.

2. Feet—General Posture.
    Standing Position.
    Arms sideward upward to diagonal, place R. foot sideward —One!
    Arm turning outward with thigh rotation outward—Two!
    Return—Three!
    Position—Four!
    Same L.

3. Head—Upper Back.
    Cross Sitting Position, Hands on Hips.
    Bend trunk forward, bring arms to arm bend position—One!
    Arm stretching sideward—Two!
    Return to arm bend—Three!
    Position—Four!

4. Feet.
    Long Sitting Position.
    Leg rotation outward, grip buttocks together against resistance of floor (rotate outward keeping feet at right angles to leg and in neutral relation to knee)—One!
    Hold—Two!—Three!
    Relax—Four!

    NOTE: This should be made purely a leg rotator exercise; the only active foot effort should be to maintain neutral position. In an effort to force the outer border or toes to touch the floor the peroneals will be activated, which is not desirable.

5. Abdomen.
    Hook Sitting Position.
    Raise trunk, separate knees, arms vertical, clasp hands over head—One!

Bend trunk forward—Two! (Head in line with trunk.)
Return—Three!
Position—Four!

Note: Raising to vertical from hook sitting position and separating knees at same time localizes with moderate severity abdominal activity. The Psoas is slackened in position of thigh flexion and becomes but slightly activated as trunk is raised forward with thigh abducted (knees separated). Keeping head in good alignment with trunk with arms vertical prevents round back and round shoulders.

6. Breathing.
  Cross Sitting Position.
    Arm turning outward, breathe in—One!
    Return and Exhale—Two!
7. Lower Back.
  1. Side Lying Position, Supporting knee bent.
    Side lying R., R. knee bent, raise L. leg upward (leg abducted)—One!
    Hold—Two!
    Return—Three!
    Position—Four!
    Repeat.
    Same L.
  2. Prone Lying Position.
    Bend knees, touch feet to buttocks, grasp feet with hands and press legs against buttocks—One!
    Return—Two!
      Note: See Note, Schedule IV, Exercise 7, 2.
8. Upper Back.
  Prone Lying Position, Fists Under Abdomen.
    Press elbows to sides, raise head, chin in, face 3 inches from floor—One!
    Trunk bending R.—Two!
    Return—Three!
    Position—Four!
    Same L.
9. Big Muscle Group.
  Mimetic—Golf Drive.
  Stride Standing Position, Grasp Club (R. little finger locked with L. forefinger, L. thumb in R. palm), Arms Hanging, Drop Head and Shoulders Forward, Eyes on Ball.
    Swing arms to R., twist trunk R.—One! (L. shoulder down, look at ball over L. shoulder).
    Stroke to opposite position—Two! (Keep head and eyes in same position, finish stroke looking at ball over R. shoulder.)
    Continue 16 counts.

10. Apparatus—Rotating Schedule.
    Repeat Schedule XI, Exercise 10, a, b, and c.
11. Breathing—Feet.
    Repeat Schedule I, Exercise 11.

## SCHEDULE XIII

1. General Organization.
    1. Facing—Facing and march steps.
    2. Marching—Line Marching. Review L. about march, class L. about halt, column L. by twos.
       Slide hop outside foot, inside foot raised rear, three running steps turning away from partner, bring feet together on fourth count. Same inside foot. Repeat.
2. Feet—General Posture.
    Standing Posiiton, Heels Apart, Toes Together (have class assume position by foot placing and not by internal rotation of thighs).
    Grip buttocks together—One!
    Slide heels together against resistance of floor—Two!
    Jump to stride stand, toeing forward—Three!
    Jump to starting position (heels apart, toes together)—Four!
3. Head—Upper Back.
    Cross Sitting Position, Hands on Hips.
    Bend trunk forward, bring arms to arm bend position—One!
    Arm stretching upward—Two!
    Return to arm bend—Three!
    Position—Four!
4. Feet.
    Long Sitting Position, R. heel in L. arch, bending knees slightly.
    Press heel to arch, bringing feet toward body, bend R. knee upward, L. knee outward—One!
    Return—Two!
    Repeat.
    Same L.
    NOTE: Pressure of heel in arch as a mild resistance centers the attention on the purpose of the movement and tends to localize the movement of inversion, adduction and front foot pronation.
5. Abdomen.
    Long Sitting Position.
    Snap trunk forward to vertical, raise knees to chest, grasp knees with arms and pull strongly—One!
    Return—Two!
    NOTE: Encourage students to keep back flat and shoulders back. First part of movement gives action to the abdomina

muscles, changing to arm pull with pressure on relaxing abdomen. Good for constipation.

6. Breathing.
   Long Sitting Position.
      Breathe in as if smelling a flower—One!
      Exhale through the mouth as if blowing through a straw—Two!
7. Lower Back.
   Side Lying Position, Supporting Knee Bent.
      Side lying R., R. knee bent, raise L. leg and L. arm (arm to vertical)—One!
      Position—Two!
      Repeat.
      Same L.
8. Upper Back.
   Prone Lying Position, Arms Reverse "T."
      Raise head, chin in, face 3 inches from floor—One!
      Raise arms from floor (airplane position) (arms in line with shoulders)—Two!
      Return head—Three!
      Position—Four!
      NOTE: The value to scapular groups intensified by exact imitation of airplane wings.
9. Big Muscle Group.
   Mimetic—Breast Stroke Swimming.
      Standing Position, Arms Vertical, Palms Forward, Forefingers Touching (head between the arms, imitating body and arms in straight horizontal line on water).
         Arms sideward, palms back, slight knee bend—One!
         Jump to Stride Standing, draw elbows to side, forefingers touch in front of chest—Two!
         Feet together, arms vertical—Three!
         Repeat.
10. Apparatus—Rotating Schedule.
    a. Stall Bars—General Stretching—Body Control.
       1. Standing Position, Facing Bars.
          Climbing upward, alternate hand and foot—4 counts.
          Passive hanging, back to bars, hands about 3 feet apart—8 counts.
          Return—4 counts (given slowly to allow relaxation for passive stretching).
       2. Standing Position, Facing Bars.
          Climbing upward, alternate hand and foot—4 counts.
          Passive hanging, back to bars, hands about 3 feet apart, contract abdominal muscles, flatten back—One!
          Hold—Two!

Leg separation (abduction)—Three!
Position—Four!
Repeat.
Return—4 counts.

b. Tilted Balance Boards—Balance and Passive Correction.

1. Standing Position on Boards.

Arms side horizontal, bend R. knee upward (hold hand of student opposite if necessary)—One!
Drop head backward, hold knee in position—Two!
Return head—Three!
Position—Four!
Same L.

2. Standing Position on Boards.

Arms side horizontal, bend R. knee upward—One!
Stretching R. leg forward, arms overhead—Two!
Return (knee upward, arms side horizontal)—Three!
Position—Four!
Same L.

NOTE: It is assumed that enough previous attention has been paid to developing the opponents of the thigh flexors (Psoas) that the tendency to hollow back has been controlled. If, however, this has not occurred, the exercise should not be used in the presence of moderate or severe pelvic tilt. The essential value of the exercise, however, is in relation to balance control developed in the leg when the leg is raised. Trunk fixation and balance with knee raised are secured with back in a corrective position.

c. Wall—General Posture.

1. Standing Position, Back to Wall, Heels Four Inches from Wall, Buttocks, Shoulders and Head Touching Wall, Lower Back Flattened.

Hand turning outward, pinch shoulder blades together —One! (press hands to wall).
Arms side horizontal, palms forward—Two! (Hold shoulder blade position and hands pressed to wall.)
Return—Three!
Position—Four!
Repeat.

2. Standing Position, Back to Wall, Heels Four Inches from Wall, Buttocks, Shoulders and Head Touching Wall, Lower Back Flattened, Arms Bend.

Sway forward into upright position by thrusting elbows to wall, keeping pelvis immovable and abdominal muscles contracted—One!
Step forward L.—Two!

Step forward R.—Three!
Heels together—Four!
Step backward L.—One!
Step backward R.—Two!
Heels together—Three!
Position—Four!
Repeat.

11. Breathing—Feet.
    Repeat Schedule I, Exercise 11.

### SCHEDULE XIV

1. General Organization.
   1. Facing—Facing and march steps.
   2. Marching—Line Marching. Review to the rear march, class to rear halt; class, about march, from a standstill, column L. and R. by twos.
      Step swing, step R., swing L. forward, step L., swing R. forward.
      Schottische step, three running steps forward, 1-2-3 hop R., swing L. forward. Repeat L.
2. Feet—General Posture.
   Standing Position.
   Arms side horizontal, lunge sideward R. feet (toeing forward) —One!
   Place hands on neck, bend trunk sideward (keep elbows well back)—Two!
   Return—Three!
   Position—Four!
   Same L.
3. Head—Upper Back.
   Cross Sitting Position, Hands on Hips.
   Bend trunk forward, arms side horizontal—One!
   Arm rotation outward, palms up—Two!
   Return—Three!
   Position—Four!
4. Feet.
   Long Sitting Position.
   Bend trunk forward, touch R. hand to L. toe, twist trunk L., place L. hand on hip—One!
   Return—Two!
   Same L.
   NOTE: To stretch tight hamstrings and tendo Achillis.
5. Abdomen.
   Hook Lying Position, Arms Reverse "T."
   Leg circling, knees bent and separated, raise legs, knees bent and separated, to chest—One!

Circling to R.—Two!
Down (feet do not touch floor) to L.—Three!
To chest—Four!
Same L.

Note: Powerful movement involving lower trunk and pelvic fixators. Caution—should not be used in cases with weak or loose Sacroiliac joints.

6. Breathing.
   Hook Lying Position.
      Arm turning outward, breathe in—One!
      Return and Exhale—Two!
7. Lower Back.
   Side Lying Position, Supporting Knee Bent.
      Side Lying R., R. knee bent, raise L. leg and head upward, sliding the L. hand down the thigh toward the knee—One!
      Position—Two!
8. Upper Back.
   Prone Lying Position, Arms Reverse "T."
      Raise head and arms from floor, head to R., face 3 inches from the floor—One!
      Bend trunk R.—Two!
      Return—Three!
      Position—Four!
      Same L.
9. Big Muscle Group.
   Mimetic—Crawl Swimming Stroke.
      Standing Position—
         L. arm to vertical, head relaxed forward—One!
         Pull L. arm down strongly, R. to vertical, turning head to side, lifting chin for breath—Two!
         Repeat.

Note: For variety adapt arm detail to form desired.

10. Apparatus—Rotating Schedule.
   Repeat Schedule XIII, Exercise 10, a, b, and c.
11. Breathing—Feet.
   Repeat Schedule I, Exercise 11.

## SCHEDULE XV

1. General Organization.
   1. Facing. Facing and march steps.
   2. Marching. Line marching. Review marching of Schedule XIV. Walking, starting outside foot and touch forward (point inside foot forward) on count 4; walking backward, starting inside foot, three steps and touch forward (point outside foot

forward) on count 4; three slides facing partner, in line of direction, third slide turn partner and repeat.

2. Feet—General Posture.
   a. Feet.
      Standing Position.
      Raise R. foot, grasp front foot with L. hand—One!
      Bend L. knee slightly, pull R. foot up—Two!
      Return—Three!
      Position—Four!
      Same L.

      Note: Good for passive stretching of foot abductors. Good for peroneal spasm or contracture, and in rigid types of flat foot.

   b. General Posture.
      Standing Position.
      Pinch shoulder blades together, R. foot placing forward—One!
      Heel raising turning toes in, arms forward to front horizontal—Two! (Hold shoulder blade position.)
      Return—Three!
      Position—Four!
      Same L.

      Note: "Arm forward" should be given only if shoulder blade pinch can be held.

3. Head—Upper Back.
   Stride Standing Position.
   Relax trunk and head forward, arms hanging—One!
   Raise trunk and head, hands on neck, bring scapulæ together, chin in, back flat—Two!
   Return—Three!
   Position—Four!

4. Feet.
   Standing Position, Toe In. (See Figs. 85 and 86, page 394.)
   Curl toes, pick up marble R. foot, keep heel stationary—One!
   Bring R. foot to L. hand and place marble in L. hand (keeping back straight)—Two!
   Return—Three!
   Marble on floor—Four!
   Same L.

5. Abdomen.
   Stride Standing Position, Hands on Top of Head.
   Trunk rotation R., bend trunk R. (keep elbows well back)—One!
   Bend trunk forward (keep elbows well back)—Two!
   Bend trunk L. (keep elbows well back)—Three!

Position, pushing head up—Four!
Same L.

NOTE: Backward bending of trunk is eliminated in trunk rotation to eliminate the tendency to arch the lower back.

6. Breathing.
   Stride Standing Position.
      Arm turning outward, breathe in—One!
      Return and exhale—Two!
7. Lower Back.
   Side Lying Position, Supporting Knee Bent.
      Side lying R., R. knee bent, raise L. leg and head upward, sliding L. hand down thigh toward the knee—One!
      L. arm raising sideward upward to vertical—Two!
      Return—Three!
      Position—Four!

      NOTE: Head raising upward with arm down accomplished by Trapezius, Sterno Cleido Mastoid and Scaleni. When the arm is elevated the head fixation necessitates more localized action to neck muscles.
8. Upper Back.
   Prone Lying Position, Clasp Hands in Rear.
      Pinch shoulder blades together (head remains on floor, upper back flat—arms remain relaxed)—One!
      Hold—Two! Three!
      Position—Four!

      NOTE: Do not raise or pull back the shoulders. Feel the arm muscles to make sure that they remain relaxed throughout the exercise.
9. Big Muscle Group.
   Mimetic—Bowling.
      Standing Position.
         Step forward L.—One! (Holding ball in R. hand, L. arm sideward to balance weight of ball.)
         Step forward R.—Two!
         Charge forward L., stroke R. arm forward, L. arm back Three!
         Position—Four!
         Same R.
         Continue 16 counts.
10. Apparatus—Rotating Schedule.
   a. Stall Bars—General Stretching—Body Control.
      1. Standing Position, Facing Bars.
         Climbing upward, alternate hand and foot—4 counts.
         Active hanging, back to bars, hands about 3 feet apart—8 counts.

Return—4 counts. (Given slowly to allow relaxation for passive stretching.)

Note: Active hanging, wide grasp, back to bars, after shoulder girdle depressors, notably pectorals and arm adductors, as pectoralis major, and teres major, have been sufficiently stretched (passive hanging in all previous stall bar exercises) there should be strong activation of scapular adductors, Rhomboids and Trapezius. As arm adductors act also as scapular abductors, it is essential to dissociate the synergistic action of these groups, *i.e.*, obtaining scapular adduction while the arm is fixed in abduction.[1]

2. Standing Position, Facing Bars.

Climbing upward, alternate hand and foot—4 counts.
Passive hanging, back to bars, hands about 3 feet apart, place the soles of feet together and draw the feet toward the body, holding the knees outward—One! (As leg movement in frog kick in back stroke swimming.)
Extend legs (diagonally outward)—Two!
Feet together—Three!
Hold—Four!
Repeat.
Return—4 counts.

b. Tilted Balance Board—Balance and Passive Correction.

1. Standing Position on Boards, Hands on Hips.

Bend trunk forward, touch hands to boards if possible—One!
Return pushing head up—Two!
Place R. hand on lower abdomen (over symphysis), L. hand in the small of the back (lumbar curve), push R. hand up with the front pelvic bone (symphysis pubis), grip the buttocks together—Three!
Hands on hips—Four!

Note: See Note, Schedule I, Exercise 10, 1b.

2. Standing Position on Boards, Hands on Hips.

Raise R. leg forward—One!
Turn foot in (keep back erect)—Two!
Return—Three!
Position—Four!
Same L.

c. Wall—General Posture.

1. Standing Position, Back to Wall, Heels Four Inches from Wall, Buttocks, Shoulders and Head Touching Wall, Lower Back Flattened.

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[1] See Lowman: "Physiotherapy in Relation to Orthopædic Problems of Shoulder Girdle and Arm," *Physiotherapy Review*, December, 1923.

Hand turning outward, pinch shoulder blades together—One! (Press hands to wall.)
Arms side horizontal, palms forward—Two! (Hold shoulder blade position and hands pressed to wall.)
Return—Three!
Position—Four!
Repeat.

2. Standing Position, Back to Wall, Heels Four Inches from Wall, Buttocks, Shoulders and Head Touching Wall, Lower Back Flattened, Arms "Tall Walk" (arms forward upward at an angle of 45°).
   Sway forward into upright position by thrusting head to wall, keeping pelvis immovable and abdominal muscles contracted—One!
   Step forward L.—Two!
   Step forward R.—Three!
   Heels together—Four!
   Step backward L.—One!
   Step backward R.—Two!
   Heels together—Three!
   Position—Four!
   Repeat.
   Note: Arms forward upward 45°. See Note, Schedule IX, Exercise 2b.

### SCHEDULE XVI

1. General Organization.
   a. Facing. Facing and march steps.
   b. Marching. Line marching. Review class about march, from a standstill. Face L. and R. march from a standstill. Review Column L. and R. by twos and fours. Outside foot, heel in front, toe behind, chain step; same inside foot. Repeat heel and toe R. (and L.) with polka and schottische steps.
2. Feet—General Posture.
   Standing Position.
   Arms side horizontal, charge forward R., toeing forward or in (keep body in line with rear leg)—One!
   Bend trunk forward, touch hands to floor—Two!
   Return—Three!
   Position—Four!
   Same L.
3. Head and Upper Back.
   Stride Standing Position.
   Place hands on neck, press shoulder blades together—One!

Bend trunk forward (keep elbows well back), chin in (keep upper back flat)—Two!
Return—Three!
Position—Four!

4. Feet.
   Standing Position.
   Raise R. foot, grasp front of the foot with L. hand, bend L. knee (keep heels on floor) weight on outer border of foot—One! Two! Three! Four! Five! Six! Seven!
   Return—Eight!
   Same L.
5. Abdomen.
   Standing Position, Hands on Hips.
   Raise R. knee, grasp with arms and pull to chest, trunk erect—One!
   Extend R. leg backward and trunk forward, hands on hips—Two!
   Return—Three!
   Position—Four!
6. Breathing.
   Cross Sitting Position.
   Arm turning outward, breathe in—One!
   Return and exhale—Two!
7. Lower Back.
   Side Lying Position, Supporting Knee Bent.
   Side lying R., R. knee bent, L. leg circumduction—One! Two! Three! Four!
   Repeat.
   Same L.
8. Upper Back.
   Prone Lying Position, Arms Side Horizontal.
   Raise head and arms, chin in, face 3 inches from floor—One!
   Turn palms up, small arm circle backward (keep upper back flat)—Two! Three! Four! Five! Six! Seven!
   Position—Eight!
9. Big Muscle Group.
   Mimetic—Soccer Free Kick or Practice for Low Volley.[1]
   Standing Position.
   "Run forward R., L.—One!
   Kick R., swing the leg forcefully forward upward, and leave the ground from the L. foot, arms sideward upward for balance—Two!
   Land L., R. foot comes to ground directly afterward, weight forward on R.—Three!"

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[1] See Frost and Cubberly: "Field Hockey and Soccer," p. 219.

NOTE: "Meet the ball with the instep, not the toes. Leaving the ground with standing leg gives greater force in a kick."

10. Apparatus—Rotating Schedule.
    Repeat Schedule XV, Exercise 10, a. b and c.
11. Breathing—Feet.
    Repeat Schedule I, Exercise 11.

# CHAPTER XXIV

## CORRECTIVE PHYSICAL EDUCATION

### LARGE HIGH SCHOOLS (ALSO COLLEGES)—SCHEDULES OF EXERCISES—INTRODUCTORY NOTES

I. Classification of Students.
  1. Assignment.
    a. Growth handicaps:
      1. Physiological (Functional).
        a. Heart.
        b. Lungs.
        c. Endocrines.
        d. Observation after illness.
      2. Anatomical (Functional).
        a. Lithe and Stout Types.
          1. Anteroposterior.
            1. Forward head.
            2. Round shoulders (shoulder girdle).
            3. Kyphosis (Round back—total—dorsal and lumbar region).
            4. Kypholordosis (Round hollow back).
            5. Lordosis (Hollow back—lumbar region).
            6. Flat back (Dorsal and lumbar regions).
            7. Flat chest.
            8. Protruding abdomen.
            9. Pelvis:
              a. Exaggeration of anteroposterior tilt.
            10. Feet:
              a. Ankle pronation.
              b. Flat feet, 1st, 2nd and 3rd degrees.
          2. Lateral defects (usually associated with one or more anteroposterior defects).
            1. Scoliosis (Postural).
            2. Lateral tilts and torsions of pelvis.
          3. General (usually associated with anteroposterior and lateral defects).
            1. Incorrect balance.
            2. Relaxed posture.
            3. Muscular insufficiency due to over fatigue and under nourishment.

b. Medium Type:

1. Postural conditions as above.

NOTE: Medium type students unless characterized by exaggerated postural conditions should be able to correct same in regular physical education classes. (Otherwise classify under "Stout Type—Corrective.")

II. Equipment.

Free Wall Space—Tilted Balance Boards. Equipment for exercises in Recumbent and Sitting Positions (canvas, mats, benches). Chest weights with push up rods. Equipment for suspension exercises. Marbles, jacks and tongue depressors. Crokinole board, ping pong and light games for Recreation Classes. (See Equipment, Chapter XV, page 130.)

III. Work Outlined.

Emphasis is placed on exercises to establish a correct body balance by first developing the individual segments of the body.

Exercises primarily in Recumbent and Sitting Positions. (See Value of Recumbency, Chapter XI, page 104.)

Emphasis on Foot Exercises.

Emphasis on Suspension Exercises.

IV. Time Required for Schedules.

The schedules are planned for forty minutes of floor work, out of which time is not taken for dressing or passing.

Rest after the hurry of dressing and passing is as essential as the exercise. Therefore foot exercises taken while sitting offer general body rest in a good sitting posture and at the same time insure daily practice of foot exercises. They should appear in every exercise schedule.

Each day's schedule should include:

1. Foot exercises.
2. Leg and general posture exercise in Sitting Position.
3. An abdominal exercise taken in Backward Lying Position
4. A breathing exercise taken in Backward Lying Position.
5. An upper back exercise in a Lying or Sitting Position.
6. A standing exercise which includes outward rotation of thighs, push up, and breathing.
7. Hanging should be added when possible.

Games for the feet may be substituted for exercises but must be chosen from those played while sitting. As pointed out, the foot exercises are given partly to relieve the postural strain of standing and partly for their value as an exercise.

V. Number of Times Per Week.

Recommendation is made that schedule be given two or three times a week. (See Organization, Chapter XVI, page 141.)

VI. Progression to New Schedule.

To secure proper development through exercises one month at least should be spent on each schedule. Sufficient time should be spent on the exercises to insure a complete understanding of subject matter presented. For additional material to be applied on Schedule see Chapters XXVII, XXVIII, XXIX and XXX.

VII. *Fundamental Position.*

*For detailed Fundamental and Standing Position—description and illustration—see* Chapter XVIII, pages 187-202. In all fundamental positions, and in all exercises, hands are at the sides unless otherwise designated.

VIII. *Nomenclature.*

A. *Statement of Exercises.* (*For detailed nomenclature see* Chapter XVIII, page 203.)

Exercises are stated as clearly and concisely as possible to convey the meaning desired. (See Methods, Chapters XIX, XX and XXI.)

B. "Return" and "Position" are used as preparatory commands in all exercises for the commands of execution "Three" and "Four."

1. "Return" indicates the return from the position assumed on count "Two."
2. "Position" indicates the return to the starting position.
3. "Relax" may be substituted for one or both "Return" and "Position."

C. Presentation of Exercises.

1. "On Command."

The general recommendation is made that the exercises be given "On Command" so that the class may execute the exercises in good form with clean-cut definite movements.

2. "In Rhythm."

Give the exercises "In Rhythm" when it is possible for the class to execute in good form and with clean-cut definite movements.

3. Informal presentation.

The presentation of the exercises without the use of a "Command" is also recommended. (See Methods, Chapter XXI, page 219.)

4. Special rhythms.

Special rhythms for certain exercises are recommended. (See Chapter XXI, page 221.) See Foot Exercises, Chapter XXVIII, page 415.)

5. Special commands.

Words suggesting the positions to be assumed are recommended for "Commands." (See Chapter XXI, page 220.)

6. Breathing exercises. (See Exercise, Chapter XVIII, page 201.)

   Breathing exercises are not given in any set rhythm established by the teacher.

D. Number of Repetitions.

The number of repetitions is not recommended for the corrective group.

The number of repetitions should vary according to the needs of the group, and the achievement of the group in the execution of the work. An average number of repetitions for each exercise is four times right and four times left.

IX. Class Organization.

The corrective group in high schools should not exceed thirty pupils.

The classes should be divided into lithe and stout types.

1. The lithe group contains the slender pupils slightly undernourished and slight pupils very much undernourished. The latter are given rest for a part of their program. This group is divided into:
   1. Hollow backs.
   2. Normal backs—Anterior—Posterior.
      Subdivided into:
      - a. Left high shoulder } Postural condition.
      - b. Right high shoulder }
   3. Total round backs.
2. The stout type is classified the same.

The underweight students because of poor nutrition of all body muscles are given foot work for muscle tone, even if no correction is indicated. The stout type is given foot exercises because the overweight is often a glandular condition which may affect bone development. In order to carry the extra weight, the muscle of the foot must be kept in good tone.

Structural cases are referred to an orthopædist and given special corrective work in smaller classes, or referred to doctor's office or clinic.

Twenty per cent underweight pupils and organic heart cases are placed in the Rest Room under the supervision of a school doctor. Temporary rest cases, post operative convalescent, accident, etc., come under this head.

Grouping for classwork.

For the inspiration that group work offers, all students are given some exercises in unison.

After the "let down" from studies and the hurry of dressing, the "Long Sitting" position against the wall offers rest and support of the back.

A short talk to hold the pupils' interest while they are resting is advisable, but the teacher must be assured that the talk is of enough interest to keep the pupils interested in her as a part of their unit.

Class foot exercises (a-b-c-d-e) bring the group together and make a closer harmony with the teacher.

Note: The pupils with hammer toes must be excluded from these exercises and given the exercise of manipulation and exercises upon the end of the balance boards at the time the class is doing the curlings. (See Exercise for Claw Feet, Chapter XXVII.)

Class is then divided into three groups:

1. Hollow backs.
2. Normal backs—Anterior—Posterior (subdivided again as to shoulders).
3. Total round backs.

Note: In these schedules hollow back means an exaggeration of the ordinary forward curve in the small of the back. For posture and fundamental work the round hollow back should be classed as hollow back in order that they may have an increased amount of abdominal work and improvement of the position of the pelvis, which is the basis for correction above. (See Value of Recumbency, Chapter XI.) All the time the lying position is assumed there is correction.

It will soon be noted that the preponderance of hollow back and anteroposterior cases over the total round backs makes it impossible to confine the three types in three distinct files or rows upon the floor. The thing necessary is to have each pupil understand her type and to be able to assume the fundamental position indicated by the exercise for her type.

Among those of the normal anteroposterior types we may find the right or left high shoulder. Students should know which shoulder is higher and should be given a few individual exercises especially adapted to their needs, *i.e.*, side lying exercises with side stated and in hanging with one hand higher than the other. (See Exercises, Chapter XXVII, page 391.)

Pupils who have good posture, but who, on account of heart and other conditions, are kept out of the regular classes year after year, are good squad leaders or monitors.

X. General Aims of Schedules.

- A. To give fundamental work to correct the individual segments of the body in relation to the general body alignment.
- B. The majority of exercises in the recumbent and sitting positions to give maximum assistance in the correction of postural defects.
- C. Emphasis on Abdominal, Low Back Exercises and Foot Exercises.
- D. Suspension and game work—Emphasis placed on Postural Values.

XI. Sequence of Exercises.

The exercises in this series are given in the following order. Teachers are urged to adapt the order to the needs and ability of the particular groups.

1. Rest and Feet.

   Foot exercises are given in sitting and lying positions to:

   1. Relieve fatigue and tension induced by the school program.
   2. Reduce joint, ligamentous and neural strain.
   3. Center the attention on the base of the body support in order to relate the upper segments to the general gravity lines in obtaining correct skeletal alignment. (See Posture and Gravity Lines, Chapter III, page 31.)

2. Lower back—Abdomen.

   Exercises to strengthen lower back and abdominal muscles and to flatten the lumbar spine are given in a recumbent position, in a sitting position and in a standing position with a broad base (in progression).

   1. To reduce balance strain and for rest purposes.
   2. To localize action of muscle groups.
   3. To decrease the possibility for incorrect position with resultant low back strain.
   4. To get strong abdominal action with less general body strain.
   5. To improve organic function, both circulatory and eliminatory.

3. Breathing.

   Breathing follows the abdominal exercises due to the physiological necessity caused by the exercise of the Big Muscle Group. (See Correct Breathing, Chapter XII, page 107.) (See Breathing Exercises, Chapter XVIII.)

4. Upper Back—Chest.

   Exercises in recumbent positions, in sitting and standing positions in progression.

   1. To correct faulty chest and upper back position.

    2. To stretch tight pectorals.
    3. To strengthen upper back muscles (especially the scapular adductors).

5. Knee.
    1. To stretch the muscle at back of leg. (Hamstrings and tendo Achillis.)
    2. To release the tension on posterior knee ligaments in cases of hyperextension, commonly called back knee, usually incident to, or associated with forward pelvis as occurs in round hollow back. This condition in generally relaxed types is commonly compensatory to faults above and below the knee.
6. Breathing.

    Breathing follows exercises of Big Muscle Groups because of physiological necessity.
7. General Posture—Sitting Position.

    Spinal Push Up in a Sitting Position. Opportunity is given to check or correct position of the segments of the body (head, trunk, hips and feet) in the Sitting Position.
    1. In relation to each other.
    2. In relation to environment.
8. Head.

    Exercises in a Sitting and Standing Position (in progression).
    1. To correct faulty head position.
    2. To strengthen relaxed muscles at the back of the neck.
9. Trunk.

    Exercises to strengthen lateral trunk muscles and abdominal muscles are given in Sitting and Standing Positions. (In progression.)
10. General.
    1. Suspension.
        a. Stretching spinal structures secured by passive hanging.
        b. General strengthening.
        c. General flexibility.
        d. Stretching of chest muscles.
    2. Balance—Feet.
        a. Fundamental standing position corrected. Correct body balance.
        b. Inversion and adduction of feet.
        c. Passive stretching of peroneals.
    3. Game.
        a. General Postural.
        b. Recreational.
        c. Psychological.

**11.** Breathing—Feet.

Breathing exercise is given at the end of the schedule because of the physiological need for breathing after the Big Muscle and apparatus exercises. A final check on the correct position of the feet is recommended at the end of each schedule.

The Recreation Class is made up of pupils unsuited to physical education. (See Classification, Chapter XIV, page 123.)

The three aims of the recreation class are:

1. Fresh air.
2. Sunshine.
3. Social contacts.

The pupils very lame through Infantile Paralysis are barred from any games in the standing position. But their lives have been lives of isolation from the activities of young people. The give and take of a game of dominoes, crokinole, or checkers played out of doors is of great physiological value.

## Corrective Physical Education
## High School and Junior High School
## Schedule of Exercises
### SCHEDULE I

1. Feet.

a. Long Sitting Position. (See Fig. 69, page 300.)

Curl toes—One!

Turn balls of feet toward each other until toes touch (knees on floor, heels stationary)—Two!

Bend ankles upward—Three!

Relax—Four!

Note: Flexing the toes relaxes the toe extensors, thereby throwing them out of action in association with the anterior tibial, thus obtaining localized action of the latter.

Caution—do not use in extreme flexible flat feet with a very powerful anterior tibial. Too much supination of the front foot may be produced, thus relaxing the peroneus longus which is essential to the maintenance of front foot pronation.

b. Long Sitting Position. (See Fig. 84, page 394.)

R. leg crossed over L., R. foot circling, keeping toes curled, make a circle, starting outward-downward, inward, upward (strong emphasis on in and up movement, none on out and down)—One!—Two!—Three!

Four!

Repeat.

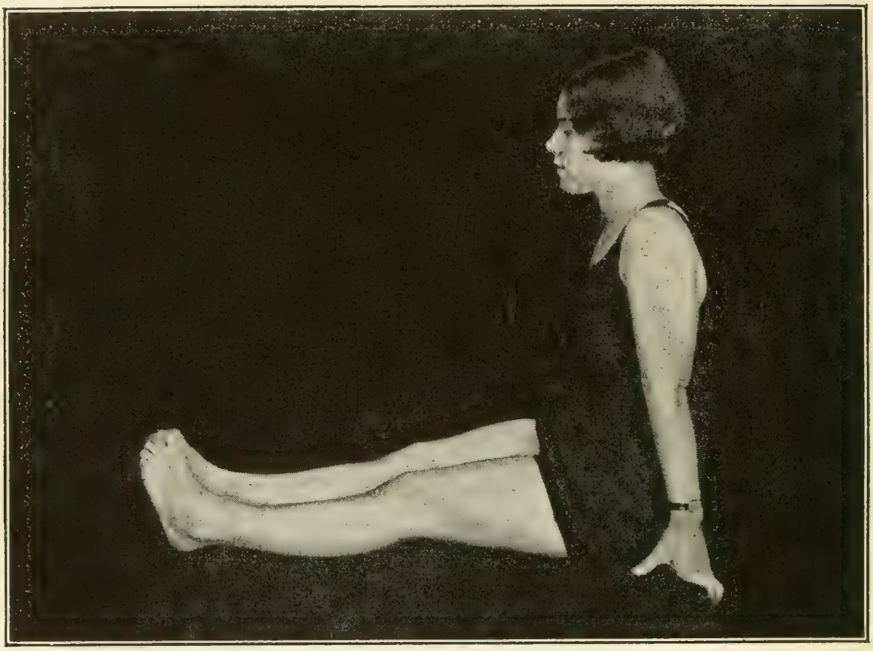

FIGURE 69

Feet—Curl Toes—Touch Balls of Feet—Bend Ankles Upward

This exercise can be defined as follows, foot circling inward by count:
Toes curled, foot circling starting out-down—One!
Inward (strongly)—Two!
Upward (strongly)—Three!
Relax—Four!

NOTE: Strengthening the Tibials and *not* the Gastrocnemius and Peroneals.

c. Hook Sitting Position.

Keep heels stationary, grasp with toes of feet, pull back along the floor as in gripping an imaginary towel—One! Two! —Three!—Four!

d. Standing Position. (See Figs. 85 and 86, page 394.)

Curl toes and pick up marble with R. foot (keeping heels stationary on the floor)—One!
Bring R. foot to L. hand and place marbles in L. hand—Two!
Bend trunk forward and replace marbles to floor—Three!
Same L.

e. Marble Games.

Pick up Marble, Chapter XXIX, page 458.
Circle Marble, Chapter XXIX, page 458.

2. Abdomen.

Backward Lying Position.

Place soles of feet together, separate knees, bend knees to chest, keeping back flat (keep hips on floor)—One! (Have the student count aloud or exhale.) (See Use Open Throat in all Leg Raising, Chapter XIII, page 118.)

Hold and pull knees to chest, flatten the back and keep hips on the floor—grasp thighs under the knees—Two!

Return to Hook Lying with knees separated, soles of feet together—Three!

Position—Four!

Note: Separating the knees before bending to chest, activates the thigh abductors, thus preventing the adductors from aiding the psoas in tilting the pelvis forward and arching the lower back. (See Straight Leg Raising, Chapter XIII, page 115.)

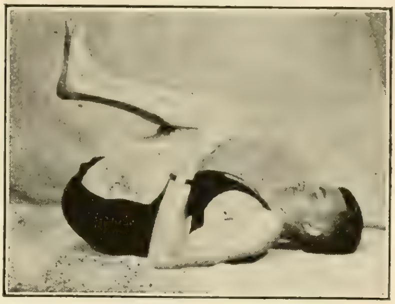

Figure 70
Abdomen—Hold and Pull Knees to Chest, Flatten Back

3. Breathing.

Hook Lying Position.

Breathe in as if smelling a flower—One!

Exhale by blowing out through the mouth as if through a straw—Two!

Note: The flower simile is used to do away with the incorrect use of the diaphragm that usually occurs when the emphasis is placed on Deep Breathing. Exhaling through the mouth is used to establish a rhythmical and controlled exhalation. (See Correct Breathing, Chapter XII, pages 107-109.) (See Breathing Exercises, Chapter XVIII.)

Class now divided into squads according to backs.

A. Normal anteroposterior curves—Squad 1.
B. Hollow back—Squad 2.
C. Total round back—Squad 3.

4. Upper Back.

A. Prone Lying Position, Squad 1, Normal anteroposterior curves.
B. Prone Lying Position, Hands Under Abdomen, Squad 2, Hollow Back.
C. Prone Lying Position, Squad 3, Round Back.

Exercise for All:

Raise head, chin in, face three inches from floor—One!

Return—Two!

Class organized in one Group.

5. Knee Alignment. (Exercises to stretch hamstrings and tendo Achillis.)

   Backward Lying Position, Knees Separated and Bent to Chest.

   Steady thighs under knee with the hand, straighten R. leg sideward, upward—One!
   Hold leg straight and toe in—Two!
   Toe forward again—Three!
   Return—Four!
   Same L.

6. Breathing.

   Repeat Exercise 3.

7. General Posture—Sitting Position.

   Cross Sitting Position, Hands in Lap.

   Push head up, chin in, stretch spine (stretch upward as tall as possible), contract abdominal muscles, flatten back—One!
   Return—Two!

   NOTE: Pushing the head up, chin in, strongly stretching the spine, spinal push up, brings about a correct alignment of head, trunk and hips. (See Spinal Push Up, Chapter XVIII, page 207.) (See Posture Cues, Chapter XIX, page 210.)

8. Head.

   Cross Sitting Position, Hands Clasped Behind Back.

   Bend head sideward right attempting to touch R. ear to R. shoulder—One!
   Return—Two!

9. Trunk.

   Cross Sitting Position.

   Touch tips of fingers to neck (elbows well back)—One!
   Bend trunk to right (keep elbows well back)—Two!
   Return—Three!
   Position—Four!
   Same L.

10. Apparatus.

    Wall.

    1. Standing Position, Back to the Wall, Heels Four Inches from Wall, Buttocks Touching Wall, Head and Shoulders Relaxed.

       Press lower back to the wall—One!
       Press neck and shoulders to the wall—Two!
       Hold—Three!
       Relax—Four!
       Repeat.

    2. Lean Stand, Facing Wall. Stand Arm's Distance Away, Body Inclined Slightly Forward, Back Flat, Hands on Wall Shoulder High and Shoulder Width Apart, Feet Parallel Two and a Half Feet from Wall.

       Bend elbows slightly—One.

Drop head forward—Two!
Raise head, chin in, pinch shoulder blades together—Three!
Position—Four!

Note: Bending elbows allows shoulder blades to come closer together; keeping back flat activates scapular adductors (rhomboids) while their opponent the serratus magnus is slackened.

11. Breathing—Feet.
    Standing Position. (See Figure 63, page 249.)
    Arm turning outward, breathe in, with thigh rotation outward (turn knees out, grip buttocks together, twisting thighs outward —keep big toe joints on the floor)—One!
    Return and Exhale—Two!

12. Formal Dismissal.

After pupils have been in squads executing different exercises it is well to give a breathing exercise at the end of the period. The gathering together of all the pupils into some peppy action seems to leave the class with the sense of well-being and order.

Exercise for dismissal:

In series of three short claps. Clap three short claps three times, stamp one and clap once again sharply.

### SCHEDULE II

1. Feet.
    a, b, c, and d as Schedule I.
    e. Games.
    Many Circle Marble, Chapter XXIX, page 459.
    Class organized into Squads according to backs.
2. Abdomen—Lower Back.
    A. Hook Lying Position (All Squads except Squad 3—Total Round Backs) Arms reverse "T."
        a. Contract the abdominal muscles and press the back to the floor—One! (See Fig. 71, page 304.)
        Relax—Two!
    B. Prone Lying Position (Squad 3—Total Round Backs).
        b. Raise head, chin in, face 3 inches from floor, pressing elbows to sides, grip buttocks, rotating thighs until heels touch—One!
        Relax—Two!
3. Breathing.
    Hook Lying Position. (All Squads.)
    Breathe in as if smelling a flower—One!
    Exhale through the mouth as if through a straw—Two!

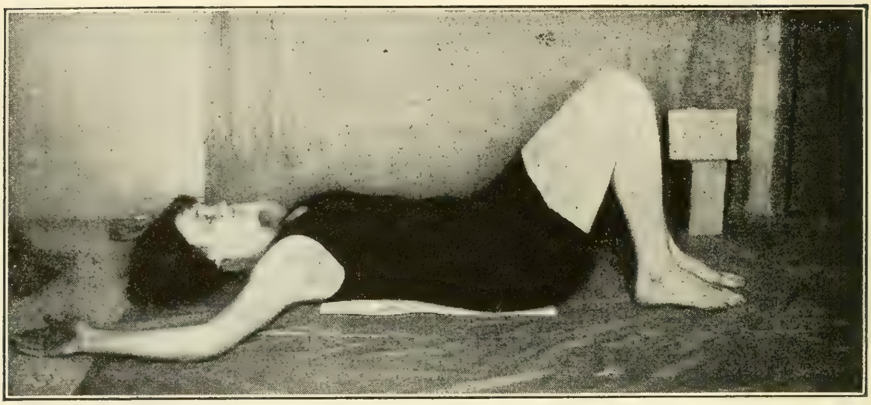

Figure 71

Abdomen—Lower Back—Press the Back to the Floor

4. Upper Backs.
   - A. Hook Lying Position, Hands on Neck. (Squad 1, Normal anteroposterior curves.)
   - B. Backward Lying Position, Knees Separated and Bent to Chest, Hands on Neck. (Squad 2, Hollow Backs.)
   - C. Backward Lying Position, Hands on Neck. (Squad 3, Total Round Back.) (See Fig. 72.)

   Exercise for all:

   Move arms to arm bend position and flatten back (keep wrists on the floor)—One!
   Hold—Two!
   Relax—Three!
   Return arms informally and repeat.

   Class organized into one Group.

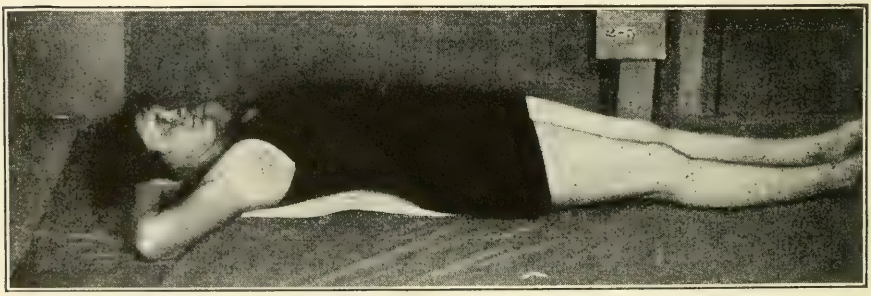

Figure 72

Upper Back—Backward Lying Position—Hands on Neck (Compare Figure 71)

5. Knee Alignment. (Exercises to stretch hamstrings and tendo Achillis.)
   Repeat Schedule I, Exercise 5.
6. Breathing.
   Repeat Exercise 3.
7. General Posture and Sitting Position.
   Cross Sitting Position, Hands in Lap.
      Push head up, chin in, stretch spine (stretch upward as tall as possible, contract abdominal muscles, flatten back—One!
      Return—Two!
8. Head.
   Cross Sitting Position, Board Held Behind Back.
      Thrust chin forward in a gawky position—One!
      Pull chin forcibly and return—Two!
         NOTE: Trunk fixation is maintained by activating the latissimus and lower trapezius.
9. General Posture.
   Walking with boards on head.
10. Apparatus.
    A. Repeat Schedule I, Exercise 10, 1 and 2.
    B. Stall Bars—General Stretching—Body Control, Standing Position, Facing Bar.
       Climbing upward, R. foot on first bar, R. hand shoulder high—One!
       L. foot and L. hand one bar higher—Two!
       Continue upward R.—Three!
       Continue upward L.—Four!
       Return—4 counts.
11. Breathing—Feet.
    Repeat Schedule I, Exercise 11.
12. Formal dismissal as Schedule I.

### SCHEDULE III

1. Feet.
   a, b, c, and d as Schedule I.
   e. Game.
      Zig Zag Marble. See Chapter XXIX.
2. Abdomen.
   a. Hook Lying, Arms to Diagonal.
      Separate knees, raising legs to chest—One!
      (Have student count aloud or exhale.)
      Lower both legs to floor on right—Two!
      Return (to chest)—Three!
      Position—Four!
      Same L.

b. Prone Lying Position.

Bend knees, touch feet to buttocks, grasp feet with hands and press legs against buttocks—One!
Return—Two!

NOTE: To stretch the psoas magnus. If the exercise seems to exaggerate the hollow back condition contract the abdominal muscles first to control the tilt of the pelvis. When it is possible in this exercise, use pillow under abdomen.

3. Breathing.

Hook Lying Position.

Breathe in as if smelling a flower—One!
Exhale by blowing out through the mouth as if through a straw—Two!

Class divided into Squads according to backs.

4. Upper Back.

A. Hook Lying Position, Arms to Diagonal. (Squad 1, Normal anteroposterior curves.)

B. Backward Lying Position, Knees Separated and Bent to Chest, Arms to Diagonal. (Squad 2, Hollow Backs.)

C. Backward Lying Position, Arms to Diagonal. (Squad 3, Total Round Backs.)

Exercise for all:

Bring arms to arm bend vs. imaginary resistance (keep elbows on floor)—One!
Hold—Two!
Return the hands to position informally and repeat.

5. Knee Alignment. (Exercises to stretch hamstrings and tendo Achillis.)

Repeat Schedule I, Exercise 5.

6. Breathing.

Repeat Exercise 3.

7. General Posture and Sitting Position.

Cross Sitting Position, Hands in Lap.

Push head up, chin in, stretch spine (stretch upward as tall as possible), contract abdominal muscles, flatten back—One!
Return—Two!

8. Head.

Cross Sitting Position, Posture Board on Heads.

Twist head right—One!
Return—Two!

9. Trunk.

Side Lying Position, Supporting Knee Bent.

Side lying on R., R. knee bent.
Raise L. leg upward, raise trunk—One!
Hold—Two!
Return—Three!
Rest—Four!
Repeat R. three times.
Same L.

Class divided into three groups for apparatus.

10. Apparatus—Rotating Schedule.
    Group I.
    Wall—General Posture.
    1. Standing with Back to the Wall, Heels Four Inches from Wall, Buttocks Touching Wall, Head and Shoulders Relaxed.
       Press lower back to the wall—One!
       Press neck and shoulders to the wall—Two!
       Hold—Three!
       Relax—Four!
       Repeat.

10. Apparatus—Rotating Schedule.
    Group II.
    2. Lean Stand, Facing Wall. Stand Arm's Distance Away, Body Inclined Slightly Forward, Back Flat, Place Hands on Wall Shoulder High and Shoulder Width Apart.
       Bend elbows slightly—One!
       Lower Head—Two!
       Raise head, chin in, pinch shoulder blades together—Three!
       Position—Four!

       NOTE: Bending elbows allows shoulder blades to come closer together and keeping back flat activates scapular adductors (rhomboids) while their opponent the serratus magnus is somewhat relaxed.

    Group III.
    Stall Bars—General Stretching—Body Control.
    1. Standing Position Facing Bar.
       Climbing upward R. foot on first bar, R. hand shoulder high—One!
       L. foot and L. hand one bar higher—Two!
       Continue upward R.—Three!
       Continue upward L.—Four!
       Return—4 counts.

    Class organized in one Group.

11. Breathing—Feet.
    Repeat Schedule I, Exercise 11.

12. Formal Dismissal.
    As Schedule I, Exercise 12.

### SCHEDULE IV

1. Feet.
   a, b, c, and d as Schedule I.
   e. Musical Marbles, Chapter XXIX, page 459.
2. Abdomen and Lower Back. (See Fig. 78, page 362.)
   Standing Position, One Foot or More from the Wall, Feet Toeing In.

   Bend the knees as if to sit—assume a sitting position with the entire back, shoulders and head touching the wall. Flatten the back, contract the abdominal muscles and press back to the wall. Straighten knees slowly, take small steps towards wall. Come to an erect position, keeping the entire back, shoulders and head in contact with the wall. (5 to 10 counts.) Assume sitting position on wall and repeat.
3. Breathing.
   Hook Lying Position.
   Breathe in as if smelling a flower—One!
   Exhale by blowing out through the mouth as if through a straw —Two!
   Class organized into Squads according to backs.
4. Upper Back.
   A. Prone Lying Position. (Squad 1, Normal anteroposterior curves.)
   B. Prone Lying Position, Hands under Abdomen. (Squad 2, Hollow Backs.)
   C. Prone Lying Position, Hands on Hips. (Squad 3, Total Round Backs.)
   Exercise for all:
   Raise head, chin in, face three inches from floor—One!
   Return—Two!
5. Knee Alignment. (Exercises for stretching hamstrings and tendo Achillis.) (See Fig. 88, page 398.)
   Backward Lying Position, Knees Separated and Bent to Chest.
   Straighten both legs upward, steady thighs with hands, curl toes and bend ankles toward body—One! Two! Three!
   Position—Four!
6. Breathing.
   Repeat Exercise 3.
7. General Posture, Posture Board on Head.
   Walk around room in waltz rhythm with a measure to each part of exercise. Each step should be one foot in length (the pupil's foot).
   Walking on opposite sides of same crack or line to insure a straight forward tread.
   Raise right leg forward—One!

Replace in progression, letting heel strike the floor first—Two!
Swing forward onto ball of right foot, keeping weight on tripod, *i.e.* (big toe joint, little toe joint, and heel), with weight on the outside of foot—Three!
Hold—Four!
Continue, Left.

8. Head.
   Standing Position.
   Head rotation to R. (Make the head go in a complete circle starting forward to R., backward to L. and forward again)—One! Two!—Three!—Four!
   Same L.

9. Trunk.
   Cross Sitting Position, Hands on Hips.
   Bend trunk forward, touch hands to floor—One!—Two!
   Raise trunk, raise arms side horizontal, snapping fingers at the same time—Three!—Four!
   Upward—Five!—Six!
   Sideward—Seven!—Eight!
   Trunk forward—Nine!—Ten!
   Raise trunk, arms sideward—Eleven!—Twelve!
   Arms upward—Thirteen!—Fourteen!
   Position—Fifteen!—Sixteen!
   Repeat.

   Sing or whistle the "Parade of the Wooden Soldiers" to give the rhythm.

10. Apparatus—Rotating Schedule.
    Wall—General Posture.
    1. Standing Position, Back to Wall, Heels Four Inches from Wall, Buttocks Touching Wall, Head and Shoulders Relaxed.
       Press lower back to wall—One!
       Press neck and shoulders to wall—Two!
       Hold—Three!
       Relax—Four!
       Repeat.
    2 Stall Bars—Social Exercise. (Class divided into two groups—No. 1's and No. 2's.)
       Number ones of the squad perform the exercise.
       Face Wall, Both hands on Wall, Shoulder High and Shoulder Distance Apart.
       Drop head forward—One!
       Raise head, pulling chin in—Two!
       Repeat.
       Number twos offer resistance.

       Stand back and to the left of the pupil performing the exercise, place left hand under pupil's left arm with fingers running upward toward the shoulder. Right forearm lies upon the upper back of pupil with palm of hand on the back of the neck. Hand is relaxed as pupil moves the head forward and resistance is offered as the head is raised. Number ones and twos exchange places.

11. Breathing—Feet.
    Repeat Schedule I, Exercise 11.
12. Formal Dismissal.
    As Schedule I, Exercise 12.

### SCHEDULE V

1. Feet.
   a, b, c, and d as Schedule I.
   e. Up Jenkins Up, Chapter XXIX, page 462.
2. Abdomen. Lower Back.
   a. Hook Lying Position.

      Knee separation, lower knees sideward (keep toes and heels on floor)—One!
      Return—Two!

      NOTE: The values in this exercise are found in the relaxation and passive stretching of the adductor groups attached around the symphysis pubis, which are usually shortened in the forward tilted pelvis, as in the hollow back. Gripping the buttocks together against floor resistance activates the gluteals, external thigh rotators and lower spinal extensors in a position in which the thigh flexors (chiefly psoas) are relaxed. It is an anti-gravity exercise involving large muscles. It is especially good in cases of relaxed pelvic structures as in a sacroiliac looseness and can also be used for depletion of pelvic congestion by tending to diffuse the blood to the larger vascular areas outside the pelvis.

   b. Hook Lying Position, Arms "T" Position.

      Raise head forward, chin in, pressing palms down—One!
      Return—Two!

      NOTE: Arms "T" Position stretches arm adductor (Pectoralis Major) and shoulder depressor (Pectoralis Minor); Hook Lying, Arms "T," furnishes a broad base with fixation points for spinal flexion forward accomplished by head raising. Head raising forward activates the abdominals in flexing the spine forward, thereby flattening the lower back. Shoulder girdle fixation checks any tendency towards increasing round back or round shoulders. Keep chin in to correct cervical lordosis.

3. Breathing.
   Hook Lying Position.
   Breathe in as if smelling a flower—One!
   Exhale by blowing out through the mouth as if through a straw—Two!
4. Upper Back.
   Prone Lying Position, Hands Clasped in Rear.
   Pinch shoulder blades together (keep head on floor, upper back flat, arms relaxed—do not raise or pull back the shoulders limit the action to the shoulder blade adductors)—One!
   Hold—Two!—Three!
   Position—Four!

   NOTE: Keeping the head on the floor and the hands interlocked with arms relaxed makes it easier to localize the action to the shoulder blade adductors. (See Shoulder Blade Pinch, Chapter XVIII, page 207.)
5. Knee Alignment. (Exercises to stretch hamstrings and tendo Achillis.)
   Repeat Schedule IV, Exercise 5.
6. Breathing.
   Repeat Exercise 3.
7. General Posture—Sitting Position.
   Cross Sitting Position, Hands in Lap.
   Push head up, chin in, stretch spine (stretch upward as tall as possible), contract abdominal muscles, flatten back—One!
   Return—Two!

   NOTE: See Note, Schedule I, Exercise 7.
8. Head.
   Cross Sitting Position, Board Held Behind Back.
   Thrust the chin forward in a gawky position—One!
   Pull chin in forcibly and return—Two!

   NOTE: See Note, Schedule II, Exercise 8.
9. Trunk.
   Cross Sitting, Boards on Head, Hands at Side.
   Raise arms sideward shoulder high, palms up, twist trunk to the right—One!
   Clap left hand onto right—Two!
   Return—Three!
   Position—Four!
   Same L.
10. Walking.
    Pigeon-toe walk around the room, keeping the feet well cupped and weight on the outside. Do slowly to insure balance and use of balancing muscles.
11. Apparatus—Rotating Schedule.
    Wall.

1. Standing Position, Back to the Wall, Heels Four Inches from Wall, Buttocks Touching Wall, Head and Shoulders Relaxed.
   Press lower back to wall—One!
   Press neck and shoulders to the wall—Two!
2. Hook Lying with Both Feet against Wall.
   Press feet against wall to flatten back—One!
   Hold—Two!
   Relax—Three!

Stall Bars.

1. Climbing upward.
   R. foot on first bar, L. hand shoulder high—One!
   L. foot and R. hand one bar higher—Two!
   Continue upward—Three!
   Continue upward—Four!
   Hang (facing outward)—8 counts.
   Return—4 counts.
2. Climbing upward (as 1)—4 counts.
   Hang (facing outward)—swing to R. and L.—8 counts.
   (Get as much range of motion as possible at waist line.)
   Return—4 counts.

12. Breathing—Feet.
    Repeat Schedule I, Exercise 11.

13. Formal Dismissal.
    As Schedule I, Exercise 12.

### SCHEDULE VI

1. Feet.
   a, b, c, and d as Schedule I.
   e. Peas Porridge, Chapter XXIX, page 415.

2. Abdomen—Lower Back. (See Fig. 81, page 386.)
   a. Hook Lying Position, Arms Vertical.
      Place soles of feet together, separate knees—One!
      Raise legs, knees bent and separated, to chest (keep hips on floor) with head raising (keep arms on floor)—Two! (Have student count aloud or exhale.)
      Return knees—Three!
      Return head—Four!

   Class divided according to backs.

   b. A. Hook Lying Position. (Squad 1, Normal anteroposterior curves.)
      B. Hook Lying Position. (Squad 2, Hollow Backs.)
         1. Contract the abdominal muscles and press the back to the floor—One!
            Relax—Two!

c. A. Prone Lying Position, Hands under Abdomen. (Squad 1, Normal anteroposterior curves.)

B. Prone Lying Position, Hands under Abdomen. (Squad 2, Hollow Backs.)

Keep pelvis and shoulders down, press hands upward and hump up the back—One!
Return—Two!

NOTE: To stretch the psoas magnus; humping up the back shortens the abdominals and prevents the thigh flexors from acting.

C. Prone Lying with Hands at side. (Squad 3, Total Round Backs.)

Raise head, pressing elbows into side, gripping buttocks by rotating thighs outward until heels touch—One!
Relax—Two!

Class Organized as one Group.

3. Breathing.

Hook Lying Position.

Inhale as if smelling a flower—One!
Exhale through the mouth as if blowing through a straw—Two!

4. Upper Back.

Prone Lying Position, Arms Reverse "T."

Raise head, chin in, face three inches from floor, stretch arms sideward, palms up—One!
Return arms and head—Two!

5. Knee Alignment. (Exercises to stretch hamstrings and tendo Achillis.)

Repeat Schedule IV, Exercise 5.

6. Breathing.

Repeat Exercise 3.

7. General Posture—Sitting Position.

Cross Sitting Position, Hands on Lap, Board on Head.

Push head up, chin in, stretch spine (stretch upward as tall as possible), contract abdominal muscles, flatten back—One!
Return—Two!

NOTE: See Note, Schedule I, Exercise 7.

8. Head.

Cross Sitting Position—(Posture Board Held Behind Back with Palms toward Body).

Bend head to right (attempt to touch R. ear to R. shoulder)—One!
Return—Two!
Same L.

9. Trunk.
   Cross Sitting Position, Board on Head, Finger Tips on Board.
   Bend trunk to the right—One!
   Return—Two!
   Lower arms sideward to shoulder level, leaving board on the head—Three!
   Finger tips on head—Four!
   Continue, alternate the bending R. and L.
10. Standing Position.
    Walk with board on head.
11. Apparatus—Rotating Schedule.
    a. Wall.
       1. Standing Position, hands behind back, flatten the lumbar curve as described in abdominal retraction exercise. Hold this position while walking on tiptoe on straight line. The added upward stretch of the ribs and dorsal spine, because of change in the position of the hands makes this a much more difficult exercise than simple abdominal retraction, in gaining a conscious contraction of the gluteal muscles. Walking on tiptoe is beneficial for balance and control.
       2. Standing Position Facing the Wall at Arm's Distance from the Wall, Hands on Hips.
          Place toe of right foot against the wall and toe straight forward with both feet, bend right knee and touch knee to the wall if possible (keep rear heel on floor and stretch the hamstring muscles)—One!
          Return—Two!
          Same L.
    b. Stall Bars.
       1. Climbing upward.
          R. foot on first bar, L. hand shoulder high—One!
          L. foot and R. hand one bar higher—Two!
          Continue upward—Three!
          Continue upward—Four!
          Hang, facing outward—8 counts.
          Return—4 counts.
       2. Climbing upward (as 1)—4 counts.
          Hang (facing outward), swing to R. and L.—8 counts.
          (Get as much range of motion as possible at waist line.)
          Return—4 counts.
12. Breathing—Feet.
    Repeat Schedule I, Exercise 11.
13. Formal Dismissal.
    Repeat Schedule I, Exercise 12.

# CHAPTER XXV

## Restricted Physical Education

## ELEMENTARY SCHOOLS—INTRODUCTORY NOTES

### Schedules of Exercises—School Room or Playground, Grades 4-8

I. Classification of Students.

Exercises planned for the regular Physical Education program to be carried on by the classroom teacher for grades four to eight. (Work may be simplified and adapted for primary grades.) The work is planned to be organized either in the school room or on the playground. (See Regular Physical Education Organization, Chapter XVII, page 161.)

II. Equipment.

School Room—Seats—Wall Space.

Playground with playground benches.

Suspension apparatus on the playground: Horizontal Bars—Horizontal Ladder.

III. Work Outlined.

Program of Activity adapted.

Exercises for correct body alignment. Minimum marching tactics. Big Muscle activities—Suspension apparatus. Emphasis placed on sitting exercises. Emphasis on foot exercises. (See Value of Sitting Exercises, Chapter XI, page 105.)

IV. Time Required for Schedules.

Schedule is planned for a twenty-minute instructional period. (Time for passing not included.)

V. Number of Times per Week.

Recommendation is made that the schedule be given two or three times a week, according to the needs of the class and the results obtained. (See Monthly and Weekly Schedule, Chapter XVII, page 163.)

VI. Progression to New Schedules.

Two weeks should be spent on each schedule.

VII. *Fundamental Positions.* (*For detailed Fundamental and Starting Positions, description and illustration see* Chapter XVIII, page 187.)

In all Fundamental Positions, in all exercises, hands are at the sides unless otherwise designated.

VIII. *Nomenclature.* (*For detailed Nomenclature, discussion and directions see* Chapter XVIII, page 203.)

- A. Statement of Exercises.

  Exercises are stated as clearly and as concisely as possible to convey the meaning desired.
- B. "Return" and "Position" are used as preparatory commands in all exercises for the commands of execution "Three" and "Four."
  1. "Return" indicates the return from the position assumed on count "Two"!
  2. "Position" indicates the return to the starting position
  3. "Relax" may be substituted for one or for both "Return" and "Position."
- C. Presentation of Exercises.
  1. "On Command."

     The general recommendation is made that the exercises be given at least one round "On Command."
     - a. To teach position.
     - b. To secure correct execution.
     - c. To emphasize good form and clean-cut definite movements.
  2. "In Rhythm."

     If the positions are clear in the minds of the student after the first round of the exercise "On Command" the exercise should be started "In Rhythm." If the positions are not clear after one round "On Command" more time should be spent in teaching and correcting positions before the exercise is started rhythmically.
  3. Special Rhythms.

     Special rhythms for certain exercises are recommended. See Exercises, Chapter XXVIII, page 414; Methods, Chapter XXI, page 221.
  4. Special Command.

     Words suggesting the positions to be assumed are recommended for commands for certain exercises. See Exercises, Chapter XXVIII, page 417. See Methods, Chapter XXI, page 220.
  4. Breathing Exercises.

     Breathing exercises are not given in a set rhythm established by the teacher.
- D. Number of Repetitions.

  Exercises are to be repeated four times R. and four times L. unless otherwise stated. (Variation should be made by the teacher to meet the needs of the class.)

  Mimetic exercises 16 or 32 counts.

IX. Class Organization.

A. In the School Room.

Pupils should be arranged in the seats so that it is possible for each pupil to have feet on the floor. Preferably the pupils should be arranged according to height, with the small pupils in front. The class should be arranged so that the girls do not stand in front of the boys. This eliminates the possibility of any self-consciousness on the part of the girls in bending or stooping exercises. The boys should be in front of the girls, or all of the boys on one side of the room, small boys in front, and all of the girls on the other side of the room, small girls in front.

Exercises are given:

1. Sitting in seats facing forward.
2. Sitting in seats facing R. and L. alternately.
3. Sitting in desks facing forward, backward and sideward.

B. On the Playground.

1. Class Organization. (See Organization, Chapter XVII, page 161.)

   The pupils should be arranged according to height. The boys should be in front of the girls as under (A) School Room Organization. Pupils should be seated on benches so that feet touch the ground.

2. Squad Organization (Boys' Squads—Girls' Squads). (See Organization, Chapter XVII, page 161.)

   The pupils should be arranged according to height. Pupils seated on benches so that feet touch the ground.

X. General Aims of Schedules.

This schedule of exercise represents a modification of activities, and is suggested for the regular posture training for elementary groups to secure a margin of safety for all by:

1. Taking a large number of exercises in the Sitting Position.
   a. To relieve strain on weak arches and flat feet; to relieve all joint strain.
   b. To minimize tendency for incorrect gymnastic position as Hollow Back, Forward Head, Incorrect Tilting of the Pelvis and Exaggeration of Protruding Abdomen.
   c. To secure symmetrical development.

      Because of the slope of the seat downward from the front to the back, the directions state that pupils should turn to R. and to L. alternately when placing feet in the aisle for the exercise, so that the exercise will not produce incorrect tilt of the pelvis. (By turning always to the R., feet in aisle on R., R. hip would be placed somewhat lower, which would tend to produce one-sidedness.) The same would be true if pupil always turned L.

d. To minimize strain on respiratory organs and heart.

2. Retaining, by means of large muscle group activities and games, the play and recreational values, but emphasizing and re-emphasizing control, form and execution of movement.
3. Eliminating exercises that in the nature of the exercises tend to produce incorrect fundamental position.
4. Eliminating apparatus not suited to needs of pupils.

XI. Sequence of Exercises.

The exercises in this series are given in the following order. Teachers are urged to adapt the order to the needs and ability of the particular groups:

1. General Organization.
   Marching—Skipping—Running for:
   1. Class Organization.
   2. General Relaxation.
2. Feet—General Posture.
   As preparation for development of muscle tone and improvement of physical and mental control and stability, the schedules are based on the principle that foot alignment is essential and fundamental to correct body posture.
3. Head—Upper Back.
   Exercises to correct faulty head and upper back positions, to strengthen the relaxed muscles at the back of neck and to strengthen muscles of the Upper Back are given in a sitting position or with a broad base for:
   1. Rest purposes—to avoid unnecessary load on joints and muscles of feet and legs.
   2. To decrease gravity pull.
4. Feet.
   Exercises to correct faulty foot position emphasized in order to secure an improved foundation for the body architecture. It is futile to attend to superstructure before correcting the base.
5. Abdomen—Lower Back.
   Abdominal and Lower Back exercises are given to strengthen weak and relaxed abdominal muscles, to strengthen Lower Back muscles and to flatten the lumbar spine in a sitting position or with a broad base.
   1. To reduce fatigue and strain on both cardio vascular and neuro-muscular mechanism.
   2. To secure localization of certain muscle groups.
   3. To get strong abdominal muscle action with less general body strain.

4. To improve function of viscera; to hasten blood flow from abdominal area and to improve metabolism.
5. To decrease the possibility for incorrect position with resultant low back strain.

**6.** Breathing.

Breathing follows the abdominal exercises due to the physiological necessity caused by the exercise of Big Muscle Groups. (See Correct Breathing, Chapter XII, pages 107-109.) (See Breathing Exercises, Chapter XVIII, page 201.)

**7.** Big Muscle Group.

Big Muscle Group activity for large joyous free movement follows work for the control and development of the different segments of the body.

1. Gives opportunity for "Big Muscle" joyous free movement.
2. Exercises presented, as Swimming, Baseball and Basket Ball mimetics, because of the play interest in the activity, etc. To serve as a connecting link between the play program and the more formal posture training program.
3. Exercises presented, as Swimming, Baseball and Basket Ball mimetics, based on activities of the group according to classification. To assist in training for skill in these activities. This exercise should serve as actual background in these skills and should be performed as accurately as possible and with the play spirit predominating to give actual technical training.

**8.** Jump.

Additional recreational, circulatory, rhythmical value. Big Muscle Group activity for large joyous free movement. Emphasis to be placed in holding feet in correct position, jumping lightly on balls of feet allowing the heels almost to touch, but very lightly.

**9.** Suspension Apparatus. (If exercises are taken in school room daily have class pass to playground at stated times, at least once a week, for suspension apparatus work.)

1. Skill gained in handling body in relation to apparatus used.
2. Stretching of spinal structures secured by passive hanging.
3. General strengthening.
4. General flexibility (for rigd and semi-rigid cases only).
5. Stretching of chest muscles.

10. Breathing—Feet.
    Breathing exercise is given at the end of the schedule because of the physiological need for breathing after the big muscle and apparatus exercises.
    A final check on the correct position of the feet is recommended at the end of each schedule.

### RESTRICTED PHYSICAL EDUCATION
### ELEMENTARY SCHOOL
### SCHEDULES OF EXERCISES
### SCHOOL ROOM AND PLAYGROUND—4-5-6 GRADES

#### SCHEDULE I

1. General Organization.
   Marching—Facing—Running—Toeing Forward (emphasize light running). See Correct Walking and Running, Chapter III, page 34. Adapt to local school room and playground conditions.
2. Feet—General Posture.
   a. Sitting in Seats, Back Supported, Feet on Floor, Toeing Forward—Check on Correct Sitting Position—Head, Trunk and Hips in Correct Alignment. (See Correct Sitting Position, Chapter III, page 33.)
   b. Stride Sitting on Benches, Feet on Ground, Toeing Forward—Check on Correct Sitting Position—Head, Trunk and Hips in Correct Alignment. (See Correct Sitting Position, Chapter III, page 33.)
      Arms sideward upward, clapping hands over head (do not let head fall forward)—One!
      Return—Two!
      NOTE: To get maximum foot value hold feet in correct position, toeing forward, outer borders of feet on floor, arches held high throughout the exercise.
3. Head—Upper Back.
   a. Sitting in Seats, Back Supported, Feet on the Floor, Toeing Forward, Hands on Top of Head.
   b. Sitting Stride on Benches, Feet on Ground Toeing Forward, Hands on Top of Head.
      Push head and hands up, chin in, stretch spine (stretch upward as tall as possible), contract abdominal muscles, flatten back—One!
      Return—Two!
      NOTE: Pushing the head up, chin in, strongly stretching the spine, brings about a correct alignment of head, trunk, and hips. (See Spinal Push Up, Chapter XVIII, page 207.)

4. Feet.
   a. Sitting in Seats, Facing Aisle R., Feet on Floor, Two Inches Apart, Toeing Forward, Hands on Desk and Back of Seat.
   b. Sitting Facing Sideward (pupils side by side), Feet on Ground, Two Inches Apart, Toeing Forward.

Curl toes (keep heels and outside of feet stationary on floor)—One!

Turn balls of feet toward each other until toes touch—Two!

Balls to floor—Three!

Relax—Four!

Note: See Note, Restricted Physical Education, Chapter XXIII, page 261, Schedule V, Exercise 4.

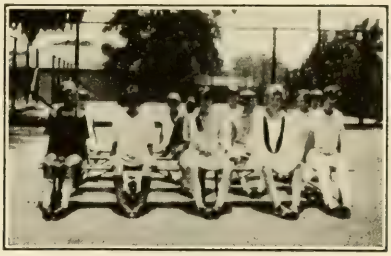

Figure 73

Feet—Sitting Facing Sideward (Pupils Side by Side) on Benches—Turn Balls of Feet Toward Each Other

5. Abdomen—Lower Back.
   a. Sitting in Seats, Back Supported, Hands at Edge of Desk.

Contract the abdominal muscles and press the back against the back of seat (use the hand position for support only, do not push)—One!

Relax—Two!

Note: Using the edge of the desk for hand support, and the back of seat as a means of contact stimulates and strengthens the movement of flattening the lower back.

   b. Sitting Stride on Benches, Feet on Ground, Toeing Forward.

R. hand on abdomen, L. hand in small of back, contract abdominal muscles, press back against L. hand—One!

Relax—Two!

Note: Applying pressure with the R. hand, and using the L. hand as a means of contact stimulates and strengthens the movement of flattening the lower back.

6. Breathing.
   a. Sitting in Seats, Back Supported, Feet on Floor, Toeing Forward.
   b. Sitting Stride on Benches, Feet on Ground, Toeing Forward.

Arm turning outward, breathe in—One!

Return and Exhale—Two!

7. Big Muscle Group.

Mimetic—Baseball Batting.

Stride Standing Position, L. Shoulder Facing Forward, Holding the Bat, with the R. Hand above the L., at R. Shoulder, ready for the Ball (L. elbow high).

Swing arms back R., twisting body to R., weight on R. foot in preparation for the hit—One!

Bat the ball, keeping L. elbow high, swing hands forward, horizontally and to the L., transfer the weight to the L. foot—Two!
Return to starting position—Three!
Repeat.

8. Jump.
   Jump Stride Stand, Arms Sideward Upward with Hand Clapping Over head.
   Standing Position.
   Jump to stride stand, arms sideward upward, clapping hands overhead—One! (feet toeing forward, jumping lightly on the balls of the feet).
   Return—Two!
   In Rhythm—Begin! (32 Counts.)
9. Suspension (have class in turn, two, four or six at a time as playground apparatus permits).
   Passive hanging on bars or on horizontal ladder, hands about three feet apart (keep the head in line with the trunk)—One!
   Hold Position—Two!

   NOTE: Let the body weight hang passively on the arms. Keep the upper back flat, and head in line with the trunk to prevent stretching of the scapular adductors. Hands about three feet apart to secure passive stretching of the chest muscles.
10. Breathing—Feet.
    Standing Position (see Figure 63, page 249).
    Arm turning outward, breathe in, with thigh rotation outward (grip buttocks together, turn knees out, twisting thighs outward—keep big toe joints on the floor)—One!
    Return and Exhale—Two!

### SCHEDULE II

1. General Organization.
   Marching—Facing—Skipping—Toeing forward (emphasize light skipping). Adapt to local school room or playground conditions.
2. Feet—General Posture.
   a. Sitting in Seats, Back Supported, Feet on Floor, Toeing Forward. Check on Correct Sitting Position (see Chapter III, page 33).
      Bend arms, contract abdominal muscles and flatten back against the seat—One!
      Arm stretching sideward, palms up, press lower back against the seat—Two!
      Return—Three!
      Position—Four!

NOTE: To get maximum foot value, hold feet in correct position, toeing forward, outer borders of feet on floor, arches held high throughout the exercise.

b. Sitting Stride on Benches, Feet on Ground, Toeing Forward. Check on Correct Sitting Position (see Chapter III, page 33).

Exercise as under "a" without the support for the back.

3. Head—Upper Back.

a. Sitting in Seats, Leaning Forward Slightly from the Hips, Feet on Floor Toeing Forward, Hands at Outer Edge of Desks, Elbows Bent Slightly.

Drop head forward—One!

Push head back against imaginary resistance, using hand support on desk to strengthen the push—Two!

(Prolong interval for count to represent time element.)

NOTE: Hands as far apart as possible to allow maximum stretching of the chest muscles. "Elbows bent slightly" allows the shoulder blades to come closer together.

b. Sitting Stride on Benches, Feet on Ground, Toeing Forward, Hands on Hips.

Exercise as under "a" without the use of hand support.

4. Feet.

a. Sitting in Seat Facing Aisle L., Hands on Desk and Back of Seat, Feet on Floor Two Inches Apart, Toeing Forward.

b. Sitting Facing Sideward (pupils side by side) on Benches, Feet on Ground Two Inches Apart, Toeing Forward, Hands at Sides Grasping Bench.

Curl toes—One!

Turn balls of feet toward each other until toes touch (keep heels stationary)—Two!

Bend ankles upward—Three!

Relax—Four!

NOTE: See Note, Restricted Physical Education, High School, Chapter XXIV, page 249, Schedule I, Exercise 4.

5. Abdomen—Lower Back. (See Fig. 78, page 362.)

a. Standing Position, Back to Wall, One Foot or More from Wall, Toeing in. (If there is no other free wall space in the school room use the door. Have each pupil do the exercise in turn.)

b. Standing Position, Back to the Wall, One Foot or More from the Wall of the School House or from Hand Ball Back Stop. Have the pupils do the exercise in turn or in groups of six or eight, according to wall space available.

Bend the knees as if to sit—assume a sitting position with the entire back, shoulders and head touching the wall. Contract the abdominal muscles, flatten the back and press the back to the wall—straighten the knees slowly, taking small steps toward the wall—come to an erect position, keeping the entire back, shoulders and head in contact with the wall—5-10 counts. Assume sitting position on the wall and repeat.

6. Breathing.
   a. Sitting in Seats, Back Supported, Feet on Floor, Toeing Forward.
   b. Sitting Stride on Benches, Feet on Ground Toeing Forward.
      Breathe in as if smelling a flower—One!
      Exhale by blowing out through the mouth as if through a straw—Two!

      Note: The flower simile is used to do away with the incorrect use of the diaphragm that usually occurs when the emphasis is placed on *Deep* Breathing. Exhaling through the mouth is used to establish a rhythmical and controlled exhalation. (See Correct Breathing, Chapter XII, page 107.)

      Note: See Breathing Exercises, Chapter XVIII, page 201.

7. Big Muscle Group.
   Mimetic—Jumping Rope.
     Standing Position.
       Hold the arms out to sides as if holding jumping rope, turn the rope and spring to R. foot—One!
       Turn rope and spring to L. foot—Two!
     or
       Turn rope and jump lightly on balls of both feet—One!
       Turn rope and repeat—Two!
   Mimetic—Playing marbles.
     Standing Position.
       Step back on R. foot—One!
       Kneel R. and shoot marble—Two!
       Return—Three!
       Position—Four!
       Same L.

8. Jump.
   Cut step sideward (single, double, triple).
     Standing Position, Hands on Hips, Weight on L. Foot, Touch R. Toe Sideward.
       Change weight to R. foot with a hop, raise L. sideward—One! (Supporting foot, toeing forward, hopping lightly on ball of foot.)
       Change weight to L. with a hop, raising R. sideward—Two!
       In Rhythm—Begin! (32 counts).
         (May be taken by hopping twice or three times on R. before changing to L.)

9. Suspension.
   Repeat Schedule I, Exercise 9.

10. Breathing—Feet.
    Repeat Schedule I, Exercise 10.

### SCHEDULE III

1. General Organization.

   Marching—Facing—Pigeon-toe marching in place—Pigeon-toe marching forward (keeping heels down).

   NOTE: Keep heels down in pigeon-toe marching to stretch the muscles at the back of legs.

   Adapt to local school room or playground conditions.

2. Feet—General Posture.
   - a. Sitting in Seats, Back Supported, Feet on Floor, Toeing in.

     Place hands on neck, contract abdominal muscles and flatten back against the seat—One!
     Arm stretching diagonally upward, palms facing, press lower back against the seat—Two!
     Return—Three!
     Position—Four!

     NOTE: To get maximum foot value, hold feet in pigeon-toe position, outer borders of feet on floor, arches held high throughout the exercise.
   - b. Sitting Stride on Benches, Feet on Ground, Toeing in.

     Exercise as under "a" without the support for the back.

3. Head—Upper Back.
   - a. Sitting in Seats, Back Supported, Feet on Floor Toeing in, Hands on Thighs.
   - b. Sitting Stride on Benches, Feet on Ground, Toeing in, Hands on Thighs. (May have book on head.)

     Push head up by pressing down on hands, stretch spine. (Do not allow shoulders to move, push the head strongly up between two immovable shoulders.)—One!
     Return—Two!

     NOTE: See Note, Schedule I, Exercise 3.

4. Feet.
   - a. Sitting in Seat Facing Aisle R., Feet Two Inches Apart, Toeing Forward, Hands on Desk and Back of Seat.
   - b. Sitting Facing Sideward (pupils side by side) on Benches, Feet on Ground Two Inches Apart, Toeing Forward, Hands at Sides Grasping Bench.

     Place legs forward, heels together on floor or ground (stretch legs forward as far as possible)—One!
     Push down on the heels (hold feet turned toward each other with toes curled)—Two!
     Return—Three!
     Position—Four!

NOTE: To stretch the muscles at the back of the legs.

5. Abdomen—Lower Back.
   a. Sitting in Seats, Back Supported, Feet on Floor, Toeing Forward.
   b. Sitting Stride on Benches, Feet on Ground, Toeing Forward.
      Arms side horizontal and flatten back—One!
      Bend trunk sideward R., and touch R. hand to floor. (Bend directly sideward, keeping head in line with trunk.)—Two!
      Return—Three!
      Position—Four!
      Same L.

      NOTE: Taking the exercise in a sitting position, keeping the feet fixed firmly on the floor, emphasizing the flattening of the back, eliminates the hollow back and strengthens the abdominal and low back exercise.

6. Breathing.
   a. Sitting in Seats, Back Supported, Feet on Floor, Toeing Forward.
   b. Sitting Stride on Benches, Feet on Ground, Toeing Forward.
      Arms side horizontal, palms up, breathe in—One!
      Return and Exhale—Two!

7. Big Muscle Group.
   Mimetic—Pitching Over Arm.
   Stride Standing Position, Ball in R. Hand, L. Shoulder Facing Forward.
   Swing R. arm back with the ball, elbow slightly bent, upper arm parallel to the shoulder, weight on the R. foot—One!
   Let the arm swing forward, keep upper arm in horizontal position (approximately), snapping arm to complete extension at the finish, step forward L., weight on the L. foot—Two!
   Return to starting position—Three!

8. Jump.
   Arms Sideward Upward with Hand Clapping Overhead, Double Stride Jump and Clap.
   Standing Position.
   Jump to stride stand, arms sideward upward, clapping hands overhead—One! (Feet toeing forward, jumping lightly on balls of the feet.)
   Repeat the jump and clap—Two! (in stride position).
   Return—Three! (feet together).
   Repeat the jump—Four! (feet together).
   In Rhythm—Begin! (32 counts).

9. Suspension (have class in turn, two, four or six at a time as playground apparatus permits).

Passive hanging on bars or horizontal ladder, hands about three feet apart, swing to R. and L.,—eight counts. (Get as much range of motion as possible at waist line.)

10. Breathing—Feet.

Repeat Schedule I, Exercise 10.

### SCHEDULE IV

1. General Organization.

Marching—Facing—Pigeon-toe Running in Place—Pigeon-toe Running Forward. (Keep heels down.)

Adapt to local school room or playground conditions.

2. Feet—General Posture.

a. Sitting in Seats, Back Supported, Feet on Floor, Toeing in, Arms Forward Bend Position.

Arm flinging sideward, contract abdominal muscles and flatten back against the seat—One!

Turn palms upward, clap hands overhead, press lower back against the seat—Two!

Return—Three!

Position—Four!

Note: To get maximum foot value, hold feet in pigeon-toe position, outer borders of feet on floor, arches held high throughout the exercise.

b. Sitting Stride on the Benches, Feet on Ground, Toeing in, Arms Forward Bend Position.

Exercise as under ''a'' without the support for the back.

3. Head—Upper Back.

a. Sitting in Seats, Back Supported, Feet on Floor, Toeing in.

b. Sitting Stride on Benches, Feet on Ground, Toeing in.

Arms side horizontal, pinch shoulder blades together. (Upper Back flat. Do not raise or pull back the shoulders. Limit the action to the muscles that fasten to the inner border of the shoulder blades, shoulder blade adductors.)—One!

Turn palms upward (hold shoulder blade position)—Two!

Return (hold shoulder blade position)—Three!

Position—Four!

Note: This exercise secures localized action of the shoulder blade adductors. See Note—Restricted Physical Education, Chapter XXIII, page 253, Schedule II, Exercise 3b. (See Shoulder Blade Pinch, Chapter XVIII, page 207.)

4. Feet.

a. Sitting in Seat, Facing Aisle L., Feet on Floor Two Inches Apart, Toeing Forward, Hands on Desk and Back of Seat.

b. Sitting Facing Sideward (pupils side by side) on Benches, Feet on Ground, Two Inches Apart, Toeing Forward, Hands at Sides Grasping Bench.

Raise legs from floor or ground as far as possible, balls of feet turned towards each other, toes curled and touching—One!

Push down on heels (hold toes in curled position, feet turned towards each other)—Two!

Return—Three!

Position—Four!

NOTE: To stretch muscles at the back of legs.

5. Abdomen—Lower Back.

a. Standing Position, Back to Wall, One Foot or More from Wall, Toeing in. (If there is no other free wall space in the school room, use the door. Have each pupil do the exercise in turn.)

b. Standing Position, Back to the Wall, One Foot or More from the Wall of the School House or from Hand Ball Back Stop. (See Fig. 78, page 362.) Have the pupils do the exercise in turn or in groups of six or eight, according to wall space available.

Bend the knees as if to sit—assume a sitting position with the entire back, shoulders and head touching the wall. Contract the abdominal muscles, flatten the back and press the back to the wall. Straighten the knees slowly, taking small steps toward the wall. Come to an erect position, keeping the entire back, shoulders and head in contact with the wall —5-10 counts. Assume sitting position on the wall and repeat.

6. Breathing.

a. Sitting in Seats, Back Supported, Feet on Floor, Toeing Forward.

b. Sitting Stride on Bench, Feet on Ground, Toeing Forward.

Arm turning outward, breathe in—One!

Return and Exhale—Two!

7. Big Muscle Group.

Mimetic—Rocking Boat.

Stride Standing Position.

Bend R. knee, bend trunk R., push down on R. side of boat with R. hand (R. hand on floor)—One!

Bend L. knee, bend trunk L., push down on L. side of boat with L. hand (L. hand on floor)—Two!

8. Jump.

Cut Step Forward Backward (single, double, triple).

Standing Position, Hands on Hips, Weight on L. Foot, Touch R. Toe Forward.

Change weight to R. foot with a hop, raise L. foot backward—One!
Change weight to L. foot with a hop, R. foot forward—Two!
Change weight to R. foot with a hop, L. foot backward—Three!
Change weight to L. foot with a hop, R. foot forward—Four!
In Rhythm—Begin! (32 counts).

9. Suspension.
   Repeat Schedule III, Exercise 9.

10. Breathing—Feet.
   Repeat Schedule I, Exercise 10.

### SCHEDULE V

1. General Organization.
   Marching—Facing—Pigeon-toe marching forward (keep heels down)—Pigeon-toe skipping forward—Pigeon-toe running forward (keep heels down).
   Adapt to local school room or playground conditions.

2. Feet—General Posture.
   a. Sitting in Seats, Back Supported, Soles of Feet Together.
      Hands on top of head—One!
      Push head and hands up, chin in, stretch spine (stretch upward as tall as possible), contract abdominal muscles, flatten back—Two!
      Return—Three!
      Position—Four!
      NOTE: To get maximum foot value hold the soles of the feet together throughout the exercise.
   b. Sitting Facing Sideward (pupils side by side) on the Benches, Soles of Feet Together.
      Exercise as "a" without the support for the back.

3. Head—Upper Back.
   a. Sitting in Seats, Back Supported, Feet on Floor, Toeing In.
   b. Sitting Stride on Benches, Feet on Ground, Toeing In.
      Head rotation to R. (make head go in a complete circle starting forward and to the R. backward and to the L. and forward again)—One! Two! Three! Four!

4. Feet.
   a. Sitting in Seats, Facing Aisle R., Feet on Floor, Two Inches Apart, Hands on the Desk and Back of Seat.
   b. Sitting Facing Sideward (pupils side by side) on the Benches, Feet on the Ground, Two Inches Apart, Hands at the Sides Grasping the Bench.

R. leg crossed over L., R. foot circling, keeping toes curled—One! Two! Three! Four! (Make a circle, starting outward-downward, inward, upward. Strong emphasis on in and up movement, none on out and down.)
Repeat.
This exercise can be defined as follows, foot circling inward by count:
Toes curled, foot circling, starting out-down—One!
Inward (strongly)—Two!
Upward (strongly)—Three!
Relax—Four!

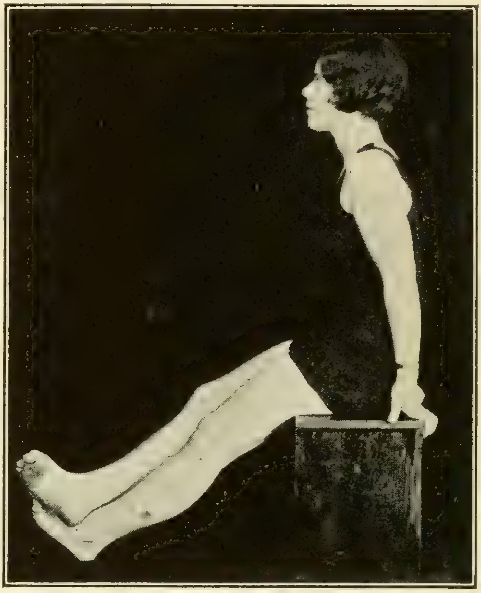

FIGURE 74
Feet—Sitting Facing Sideward on the Bench, R. Leg Crossed Over L.—R. Foot Circling Out-down, in and up strongly

NOTE: To strengthen the Flexors and Invertors, and not the Extensors and the Everters.

5. Abdomen—Lower Back.
   a. Sitting on Top of Desks, Facing Rear of Room, Knees Separated, Fix the Feet at Outer Edge of Seat, Between the Seat and the Back Support, Arms Folded on Abdomen.
   b. Sitting Stride on Benches, Feet on Ground, Toeing Forward, Arms Folded on Abdomen.

Drop trunk and head forward—One!
Raise to upright position as if against imaginary resistance, press hands to abdomen, chin in, shoulder blades together—Two!

NOTE: Arms folded on abdomen with pressure as suggested gives massage to abdominal muscles.

6. Breathing.
   a. Sitting in Seats, Back Supported, Feet on Floor, Toeing Forward.
   b. Sitting Stride on Benches, Feet on Ground, Toeing Forward.

Breathe in as if smelling flower—One!
Exhale by blowing out through the mouth as if through a straw—Two!

NOTE: See Note, Schedule II, Exercise 6.

7. Big Muscle Group.

Mimetic—Crouch start for running.

Standing Position.

Step back with R. foot, kneel on R. knee, tips of fingers on floor about 12 inches apart just in front of L. toe, thumbs toward center, R. knee opposite L. instep, L. foot toeing forward—One!

Raise R. knee about 6 inches from floor, head up, eyes straight front—Two!

Return—Three!

Position—Four!

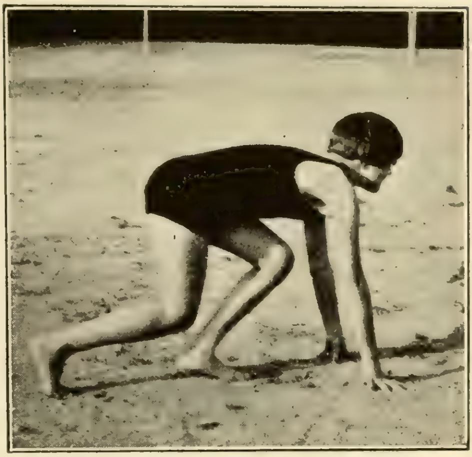

FIGURE 75
Big Muscle Group—Crouch Start for Running

8. Jump.

R. Heel Forward, Jump and Change Weight, Touching Alternate Heels.

Standing Position, Weight on R. Foot, Touch L. Heel Forward.

Hop on the L. foot, touch R. heel forward—One! (Supporting foot toeing forward.)

Change weight, jump on R. foot, touching L. heel forward—Two! (Hopping lightly on the ball of the foot.)

In Rhythm—Begin! (32 counts.)

9. Suspension. (Have class in turn, two, four or six at a time, as apparatus permits.)

Passive Hanging on Bars or on Horizontal Ladder, Hands About Three Feet Apart.

Contract abdominal muscles and flatten back, keep head in line with trunk—One!

Thigh rotation outward (hold abdominal contraction)—Two!

Return (hold abdominal contraction)—Three!

Position—Four!

10. Breathing—Feet.

Repeat Schedule I, Exercise 10.

### SCHEDULE VI

1. General Organization.

Marching—Facing—Pigeon-toe marching sideward (keep heels down), step sideward R. and close L. foot to R. Pigeon-toe marching sideward, cross step in front and step (step sideward R., cross L. in front, step sideward R., close L. foot to R.). Same crossing L. in back.

Adapt to local school room or playground conditions.

2. Feet—General Posture.
   a. Sitting in Seats, Back Supported, Soles of Feet Together.

      Hands on top of head—One!

      Arm stretching to "Tall Walk" and flatten back against the seat—Two!

      Return—Three!

      Position—Four!

      NOTE: To get maximum foot value hold the soles of the feet together throughout the exercise. Arms "Tall Walk," see Note, Restricted Physical Education, High School, Chapter XXIII, page 270, Schedule IX, Exercise 2b.
   b. Sitting Facing Sideward (pupils side by side) on the Benches. Soles of Feet Together.

      Exercise "a" without the support for the back.
3. Head—Upper Back.
   a. Sitting in Seats, Back Supported, Feet on Floor Toeing In.
   b. Sitting Stride on Benches, Feet on Ground, Toeing In.

      Arms side horizontal, pinch shoulder blades together (keep upper back flat)—One!

      Head rotation R.—make the head go in a complete circle starting forward, and to the R. backward and to L. and forward again (hold shoulder blade position)—Two! Three!

      Position—Four!

      Same L.
4. Feet.
   a. Sitting in Seat Facing Aisle L., Hands on the Desk and the Back of the Seat, Soles of Feet Together.
   b. Sitting Facing Sideward (pupils side by side) on the Benches, Soles of Feet Together, Hands at the Sides Grasping Benches.

      Bend ankles upward (keep heels stationary)—One!

      Return—Two!
5. Abdomen—Lower Back.
   a. Sitting on Top of Desks, Facing Rear of Room, Knees Separated, Fix the Feet at Outer Edge of Seat, Between the Seat and the Back Support, Hands on Abdomen.
   b. Sitting Stride on Benches, Feet on Ground, Toeing Forward, Hands on Abdomen.

      Bend trunk forward—One!

      Trunk twisting R.—Two!

      Return—Three!

      Position—Four!

      Same L.

6. Breathing.
   a. Sitting in Seats, Back Supported, Feet on Floor, Toeing Forward.
   b. Sitting Stride on Benches, Feet on Ground, Toeing Forward.
      Arms side horizontal, palms up, breathe in—One!
      Return and exhale—Two!
7. Big Muscle Group.
   Mimetic—Chopping.
      Stride Standing Position, Hands Together at R. Shoulder, Trunk Twisted to R., Head to R. and Back.
         Chop down, twist trunk forward, bend trunk forward downward, swing arms forward downward—One!
         Return hands to L. shoulder (trunk twisted to L. and head to L. and back)—Two!
         Chop down (as One!)—Three!
         Return to R. shoulder—Four!
8. Jump.
   Jump Stride, Cross in Front, Stride and Position.
      Standing Position, Hands on Hips.
         Jump stride stand—One! (Feet toeing forward, jumping lightly on balls of the feet.)
         Jump, cross R. foot in front of L.—Two!
         Jump stride stand—Three!
         Jump cross L. foot in front of R.—Four!
         Jump stride stand—Five!
         Jump (feet together)—Six!
         In Rhythm—Begin! (36 counts.)
9. Suspension.
   Repeat Schedule V, Exercise 9.
10. Breathing—Feet.
   Repeat Schedule V, Exercise 10.

### SCHEDULE VII

1. General Organization.
   Marching—Facing—Skipping—Single march steps forward and backward—Single march steps forward and backward, combined with R. and L. facing.
      Adapt to local school room or playground conditions.
2. Feet—General Posture.
   a. Sitting in Seats, Back Supported, Soles of Feet Together.
      Bend arms, contract abdominal muscles and flatten back against the seat—One!
      R. arm stretching upward, L. downward, press lower back against the seat—Two!
      Return—Three!
      Position—Four!

b. Sitting Facing Sideward (pupils side by side) on the Benches, Soles of Feet Together.

Exercise as "a" without the support for the back.

NOTE: To get maximum foot value hold the soles of feet together throughout the exercise.

3. Head—Upper Back.

a. Sitting in Seats, Back Supported, Toeing In, Hands on Hips.

b. Sitting Stride on Benches, Feet on Ground, Toeing In, Hands on Hips.

Bend trunk forward, head up (keep back flat)—One!
Drop head forward (keep back flat)—Two!
Raise head, pull chin in strongly (keep back flat)—Three!
Position (keep back flat and chin in on the return)—Four!

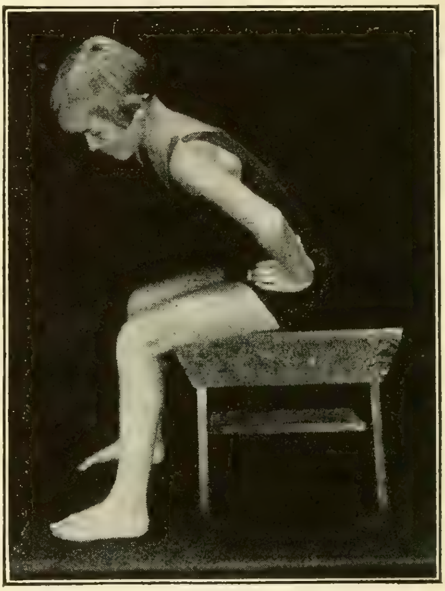

FIGURE 76

Head—Upper Back—Bend Trunk Forward, Head Up. Note Foot Position

4. Feet.

a. Sitting in Seats, Facing Aisle R., Feet on Floor, Two Inches Apart.

b. Sitting Facing Sideward (pupils side by side) on Benches, Feet on Ground, Two Inches Apart.

Place legs forward, heels together on floor, stretch legs forward as far as possible—One!
Bend trunk forward, raise R. leg and touch R. toe with L. hand, place R. hand on hip—Two!
Return—Three!
Position—Four!
Same L.

NOTE: To stretch the muscles at the back of legs.

5. Abdomen—Lower Back.

a. Sitting on Top of Desks, Facing Rear of Room, Knees Separated, Fix the Feet at the Outer Edge of Seat, Between the Seat and the Back Support, Arms Folded on Abdomen.

b. Sitting Stride on Benches, Feet on Ground, Toeing Forward, Arms Folded on Abdomen.

Twist trunk R.—One!
Trunk bending forward, pressing hands on abdomen—Two!

Return, pressing hands on abdomen—Three!
Position—Four!

NOTE: Arms folded on abdomen with pressure suggested gives massage to abdominal muscles.

6. Breathing.
   a. Sitting in Seats, Back Supported, Feet on Floor, Toeing Forward.
   b. Sitting Stride on Benches, Feet on Ground, Toeing Forward.
      Arm turning outward, breathe in—One!
      Return and exhale—Two!
7. Big Muscle Group.
   Mimetic—Baseball Catch and Throw.[1]
   Standing Position.
   Raise heels, fling arms overhead quickly (catching ball overhead)—One!
   Throw to first base, stepping forward with L. foot—Two!
   Position, bring rear foot to the advance foot—Three!
   Same L.
8. Jump.
   Jump Forward Stride.
   Standing Position, Hands on Hips.
   Jump forward stride, place R. foot forward, L. foot backward, feet toeing forward, weight evenly divided—One!
   Jump, feet together—Two!
   Jump forward stride, place L. foot forward, R. backward, weight evenly divided—Three!
   Position—Four!
   In Rhythm—Begin! (32 counts.)
9. Suspension. (Have class in turn, in twos or fours or sixes as apparatus permits.)
   Passive Hanging on Bars or Horizontal Ladder, Hands About Three Feet Apart.
   Contract abdominal muscles and flatten back—One!
   Leg separation (abduction)—Two!
   Return—Three!
   Position—Four!
10. Breathing—Feet.
    Repeat Schedule I, Exercise 10.

### SCHEDULE VIII

1. General Organization.
   Marching—Facing—Running—Single march steps sideward, single march steps sideward combined with R. and L. facing.
   Adapt to local school room or playground conditions.

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[1] See Halsey and Skarstrom: "Schoolroom Gymnastic Lessons."

2. Feet—General Posture.
   a. Sitting in Seats, Back Supported, Soles of Feet Together.
      Bend arms, contract abdominal muscles and flatten back against the seat—One!
      R. arm stretching upward, L. arm sideward, press lower back against the seat—Two!
      Return—Three!
      Position—Four!
      Same L.
   b. Sitting Facing Sideward (pupils side by side) on the Benches, Soles of Feet Together.
      Exercise as "a" without the support for the back.
      NOTE: To get maximum foot value, hold the soles of the feet together throughout the exercise.
3. Head—Upper Back.
   a. Sitting in Seats, Back Supported, Hands on Neck.
   b. Sitting Stride on Benches, Feet on Ground, Toeing Forward, Hands on Neck.
      Bend trunk forward, head up, back flat—One!
      Drop head and arms forward (keep back flat)—Two!
      Raise head and arms, pull chin in strongly (keep back flat)—Three!
      Position (keep back flat and chin in on the return)—Four!
4. Feet.
   a. Sitting in Seat Facing Aisle L., Hands on Desk and Back of Seat, Feet on Floor, Toeing In, Heels Five Inches Apart.
   b. Sitting Facing Sideward (pupils side by side) on Benches, Feet on Ground, Toeing In, Heels Five Inches Apart.
      Raise and clap balls of feet together keeping heels stationary (may be able to touch toes only, but make effort to clap balls of feet together)—One!
      Relax—Two!
5. Abdomen—Lower Back.
   a. Sitting on Top of Desks, Facing Rear of Room, Knees Separated, Fix the Feet at the Outer Edge of the Seat, Between the Seat and the Back Support, Hands on the Neck.
   b. Sitting Stride on Benches, Feet on Ground, Toeing Forward, Hands on Neck.
      Twist trunk R. (keep elbows well back)—One!
      Bend trunk L., L. elbow toward L. knee (keep elbows well back)—Two!
      Bend trunk R. and to rear (bend away from L. knee as far as possible—keep elbows well back)—Three!
      Position (bend R. and twist to the front on the return)—Four!

6. Breathing.
   a. Sitting in Seats, Back Supported, Feet on Floor, Toeing Forward.
   b. Sitting Stride on Bench, Feet on Ground, Toeing Forward.
      Arms side horizontal, palms up, breathe in—One!
      Return and Exhale—Two!

7. Big Muscle Group.
   Mimetic—Archery.
   Stride Standing Position, Arms Forward Bend, Hands Closed.
      Extend bow arm L. sideward, grasp the cord with the R., turning head to the L.—One!
      Pull and shoot—Two!
      Starting position—Three!
      Same R.

8. Jump.
   Jump Side and Forward Stride, Alternately.
   Standing Position, Hands on Hips.
      Jump to stride stand—One! (Feet toeing forward, jumping lightly on the balls of feet.)
      Heels together—Two!
      Jump forward stride, place R. foot forward, L. foot backward—Three! (Feet toeing forward, weight evenly divided.)
      Heels together—Four!
      Same L.
      In Rhythm—Begin! (32 counts.)

9. Suspension.
   Repeat Schedule VII, Exercise 9.

10. Breathing—Feet.
   Repeat Schedule I, Exercise 10.

### SCHEDULE IX

1. General Organization.
   Marching—Facing—Marching backward—Single march steps forward and backward combined with about facing.
   Adapt to local school room or playground conditions.

2. Feet—General Posture.
   a. Sitting in Seats, Back Supported, Soles of Feet Together, Arm Bend Position.
      Stretch R. arm upward, L. arm downward, contract abdominal muscles and flatten back against the seat—One!
      Change arm position by moving R. arm sideward downward,

L. arm sideward upward, press lower back against the seat—Two!
Return—Three!
Position—Four!
Same L.

b. Sitting Stride on Benches, Feet on Ground Toeing In.
Exercise as "a" without the support for the back.

NOTE: To get maximum foot value hold the soles of feet together throughout the exercise.

3. Head—Upper Back.
   a. Sitting in Seats, Back Supported, Feet on Floor, Toeing Forward, Hands Clasped in Rear.
   b. Sitting Stride on Benches, Feet on Ground, Toeing Forward, Hands Clasped in Rear.

Bend head sideward R. (try to touch ear to shoulder)—One!
Return—Two!
Same L.

NOTE: Hands clasped in rear causes fixation of the shoulders so that the sideward bending of head must be done without raising the shoulders.

4. Feet.
   a. Sitting in Seat Facing Aisle R., Hands on Desk and Back of Seat, Feet on Floor, Toeing Forward, Five Inches Apart.
   b. Sitting Facing Sideward (pupils side by side) on Benches, Feet on Ground, Toeing Forward, Five Inches Apart.

Turn balls of feet toward each other and touch toes (keep heels stationary)—One!
Bend ankles upward—Two!
Hold—Three!
Position—Four!

5. Abdomen—Lower Back.
   a. Sitting on Top of Desks, Facing Side of Room, Legs Hanging Free, Hands Grasping Edge of Desk.

Raise R. and L. leg alternately with small movements from the hip joint (keep the knees stiff as in flutter kick in swimming)—One! Two! Three! Four!

b. Sitting Stride on Benches, Feet on Ground, Toeing Forward, Hands on Abdomen.

Trunk rotation R., bend trunk R.—One!
Trunk bending forward—Two!
Trunk bending L.—Three!
Position, pushing up on the top of head—Four!
Same L.

NOTE: Backward bending of trunk is eliminated in the trunk circling to eliminate the tendency to arch the lower back.

6. Breathing.
    a. Sitting in Seats, Back Supported, Feet on Floor, Toeing Forward.
    b. Sitting Stride on Benches, Feet on Ground, Toeing Forward.
        Breathe in as if smelling a flower—One!
        Exhale through the mouth as if through a straw—Two!
7. Big Muscle Group.
    Mimetic—Basket Ball, Free Throw for Goal.
        Stride Standing Position, Ball Held in Front.
            Bend the knees, swing the ball down between the knees (keep head up)—One!
            Throw the ball, extending the arms forward upward, straighten the knees, jump into the air—Two!
            Repeat.
8. Jump.
    Running Broad Jump Over Two Lines. (Have class in turn run and jump over two parallel lines, length of jump to be adjusted to needs and ability of group.)
        Standing Position.
            The jump is taken by each pupil in turn; starting with a run, spring from one foot and land lightly on both.
9. Suspension. (Have class in turn in twos, fours or sixes as apparatus permits.)
    Passive Hanging on Bars or Horizontal Ladder, Hands About Three Feet Apart.
        Contract abdominal muscles, flatten back—One!
        Raise R. leg sideward—Two!
        Return—Three!
        Position—Four!
        Same L.
10. Breathing—Feet.
    Repeat Schedule I, Exercise 10.

### SCHEDULE X

1. General Organization.
    Marching—Facing—Skipping forward and backward—Single march step sideward combined with about facing.
        Adapt to local school room or playground conditions.
2. Feet—General Posture.
    a. Sitting on Seats, Back Supported, Soles of Feet Together, Arm Bend Position.
        Stretch R. arm upward, L. arm sideward, contract abdominal muscles and flatten back against the seat—One!

Change arm position by moving R. arm sideward, L. arm upward, press lower back against the seat—Two!
Return—Three!
Position—Four!
Same L.

b. Sitting Stride on Benches, Feet on Ground, Toeing In.
Exercise as "a" without the support for the back.

NOTE: To get maximum foot value hold the foot in the position indicated throughout the exercise.

3. Head—Upper Back.
a. Sitting in Seat, Back Supported, Feet on Floor Toeing Forward, Arms Side Horizontal, Palms Up.
b. Sitting Stride on Benches, Feet on Ground Toeing Forward, Arms Side Horizontal, Palms Up.
Describe small arm circles backward (increase the size of circle gradually)—One! Two! Three! Four!

NOTE: Keep upper back flat during the exercise, thus activating the muscles that attach to the shoulder blades (scapular adductors).

4. Feet. (See Fig. 85, page 394.)
a. Sitting in Seat, Facing Aisle L., Hands on Desk and Back of Seat, Feet on Floor, Toeing Forward.
b. Sitting Facing Sideward (pupils side by side) on the Benches, Feet on the Ground, Toeing Forward.
Curl toes and pick up marble with R. foot (keep heels stationary on floor)—One!
Bring R. foot to L. knee and place marble in L. hand—Two!
Replace R. foot—Three!
Same L.

NOTE: Placing marble in hand on opposite side gives added stretch to the muscles on the outside of the leg.

5. Abdomen—Lower Back.
a. Sitting on Top of Desk Facing Side of Room, Legs Hanging Free, Hands Grasping Edge of Desk.
Contract abdominal muscles, flatten back, straighten legs forward—One!
Leg separation (abduction)—Two!
Return—Three!
Position—Four!
b. Sitting Stride on Benches, Feet on Ground, Toeing Forward, Hands on Abdomen.
Trunk rotation R., bend trunk R., press hands to abdomen—One!
Trunk bending forward, press hands to abdomen—Two!
Trunk bending L., press hands to abdomen—Three!

Position, pushing head up—Four!
Same L.

NOTE: Hand pressure on abdomen gives massage to abdominal muscles.

6. Breathing.
   a. Sitting in Seats, Back Supported, Feet on Floor, Toeing Forward.
   b. Sitting Stride on Benches, Feet on Ground, Toeing Forward.
      Arm turning outward, breathe in—One!
      Return and exhale—Two!

7. Big Muscle Group.
   Mimetic—Back Stroke Swimming Using One Leg at a Time.
   Standing Position.
   Turn R. knee out and draw the R. foot to the L. knee, sole of foot on the knee, and draw hands along the sides to under arm position—One!
   Extend arms sideward, palms down, a little above side horizontal and extend R. leg diagonally outward—Two!
   Arms to sides, feet together—Three!
   Hold—Four!
   Same L.

8. Jump.
   Running High Jump Over Ruler. (Have class in turn run and jump over ruler—height to be adjusted to needs and ability of group.)
   Standing Position.
   Jump is taken by each pupil in turn—starting with a run, spring from one foot and land lightly on both.

9. Suspension.
   Repeat Schedule IX, Exercise 9.

10. Breathing—Feet.
    Repeat Schedule I, Exercise 10.

## SCHEDULE XI

**1.** General Organization.
   Marching—Facing—Two march steps forward combined with facing—step hop, step on the R. foot, hop on the R. foot and swing L. forward. Same L. Schottische step, three running steps and hop, three running steps R., L. R. and hop on the R. foot and swing L. forward.
   Same L.
   Adapt to local school room or playground conditions.

2. Feet—General Posture.
   a. Sitting in Seats, Back Supported, Soles of Feet Together, Arms Forward Bend.

      Extend R. arm sideward, L. hand at R. shoulder, L. elbow bent as in forward bend position, flatten back against the seat—One!

      Both arms sideward upward over head in large circle to L., L. arm side horizontal, and R. arm at L. shoulder, R. elbow bent as in forward bend position, press lower back against the seat—Two!

      Return—Three!

      Position—Four!

      Same L.

   b. Sitting Stride on Benches, Feet on Ground, Toeing in.

      Exercise as "a" without the support for the back.

      Note: To get the maximum foot value, hold the soles of the feet together throughout the exercise.

3. Head—Upper Back.
   a. Sitting in Seats, Back Supported, Feet on Floor Toeing Forward, Arms Forward Bend.
   b. Sitting Stride on Benches, Feet on Ground, Toeing Forward, Arms Forward Bend.

      Bend trunk forward (keep upper back flat)—One!

      Head twisting R.—Two!

      Return—Three!

      Position—Four!

      Same L.

4. Feet.
   a. Sitting in Seats, Facing Aisle R., Feet on Floor, Two Inches Apart, Toeing Forward, Hands on Desk and Back of Seat.
   b. Sitting Facing Sideward (pupils side by side), on Benches, Feet on Ground, Two Inches Apart, Toeing Forward, Hands at Sides Grasping Bench.

      Cross R. leg over L.—One!

      Raise R. leg as far as possible, push down on R. heel, turn front of foot in—Two!

      Return—Three!

      Position—Four!

      Same L.

      Note: To stretch the muscles at the back of leg.

5. Abdomen—Lower Back.
   a. Sitting on Top of Desk, Facing Side of Room, Legs Hanging Free, Hands Grasp Edge of Desk.

      Straighten legs forward—One!

Place soles of feet together, separate and bend knees slightly —Two!
Return—Three!
Position—Four!

b. Sitting Stride on Benches, Feet on Ground, Toeing Forward. Hands on Top of Head.
Trunk rotation R., bend trunk R.—One!
Trunk bending forward—Two!
Trunk bending L.—Three!
Position, pushing head and hands up—Four!
Same L.

6. Breathing.
a. Sitting in Seats, Back Supported, Feet on Floor, Toeing Forward.
b. Sitting Stride on Benches, Feet on Ground, Toeing Forward.
Arms side horizontal, palms up, breathe in—One!
Return and Exhale—Two!

7. Big Muscle Group.
Mimetic—Basket Ball Throw for Distance.
Stride Standing Position, L. Shoulder Facing Forward.
Hold the ball in the R. arm, arm extended backward, place weight on R. foot and bend R. knee slightly, L. arm forward for balance—One!
Swing R. arm and ball forward upward, L. arm backward, stepping forward L.—Two!
Return to starting position, bring R. foot to L.—Three!
Repeat.

8. Jump.
Jumping Forward with Arm Flinging.
Standing Position.
Rise on toes and raise arms forward—One!
Bend knees and stretch the arms backward—Two!
Jump forward, fling arms forward, landing lightly on the toes with knees bent, back straight, hands at the sides—Three!
Position—Four!

9. Suspension (have class in turn in twos, fours or sixes as apparatus permits).
Passive Hanging on Bars or Horizontal Ladder, Hands about Three Feet Apart.
Contract abdominal muscles, flatten back—One!
Curl toes, push down on heels, bend ankles upward—Two!
Return—Three!
Position—Four!

10. Breathing—Feet.
Repeat Schedule I, Exercise 10.

### SCHEDULE XII

1. General Organization.

   Marching—Facing—Two march steps backward combined with facing. Two Schottische steps forward, four step hops. Same backward.

   Adapt to local school room or playground conditions.

2. Feet—General Posture.

   a. Sitting in Seat, Back Supported, Soles of Feet Together, Arms to Diagonal.

   Pull arms downward, as if against resistance and flatten back against the seat—One!

   Hold—Two!—Three!

   Return arms to diagonal—Four!

   b. Sitting Stride on Benches, Feet on Ground Toeing in.

   Exercise as "a" without the support for the back.

   Note: To get the maximum foot value hold the soles of the feet together throughout the exercise.

3. Head—Upper Back.

   a. Sitting in Seats, Back Supported, Feet on Floor, Toeing Forward, Hands on Neck.

   b. Sitting Stride on Benches, Feet on Ground, Toeing Forward, Hands on Neck.

   Bend trunk forward (keep upper back flat)—One!

   Head twisting R. (do not move hands, keep upper back flat, elbows well back)—Two!

   Return head (keep upper back flat, elbows well back)—Three!

   Position—Four!

   Same L.

4. Feet.

   a. Sitting in Seats, Facing Aisle L., Feet on Floor, Two Inches Apart, Toeing Forward, Hands in Lap.

   b. Sitting Facing Sideward (pupils side by side) on Benches, Feet on Ground, Toeing Forward, Two Inches Apart, Hands in Lap.

   Cross feet, outer border of foot in contact with floor—One!

   Stand, keeping feet crossed and weight on outer border of feet—Two!

   Resume sitting position (keep feet crossed)—Three!

   Position—Four.

   Note: Hands are placed in the lap to keep them from assisting in assuming the standing position. This makes it necessary for all of the muscular work to be performed by the leg (feet in corrected position) and trunk muscles.

5. Abdomen—Lower Back.

   a. Sitting in Seats, Facing Aisle R., Feet on Floor, Two Inches Apart, Toeing Forward, Hands at Sides.

b. Sitting Facing Sideward (pupils side by side) on Benches, Feet on Ground, Two Inches Apart, Toeing Forward, Hands at Sides.

Contract the abdominal muscles and flatten the back—One!
Stand, keeping abdominal muscles contracted, back flat and trunk erect (do not allow hands to assist in assuming the standing position)—Two!
Resume sitting position (keep abdominal muscles contracted and back flat)—Three!
Position—Four!

NOTE: Keeping abdominal muscles contracted and back flat in assuming standing position does not allow leaning forward from the waist.

6. Breathing.

a. Sitting in Seats, Back Supported, Feet on Floor, Toeing Forward.

b. Sitting Stride on Benches, Feet on Ground, Toeing Forward.

Breathe in as if smelling a flower—One!
Exhale through the mouth as if through a straw—Two!

7. Big Muscle Group.

Mimetic—Crawl Stroke Swimming.

Standing Position.

L. arm to vertical, head relaxed forward—One!
Pull L. arm down strongly, R. to vertical, turning head to side, lifting chin for breath—Two!
Repeat.

NOTE: Adapt arm detail to form desired.

8. Jump.

Jump in Place with Arm Flinging Overhead and Turning 90°.[1]

Standing Position.

Rise on toes, and raise arms forward—One!
Swing arms quickly down and overhead, at the same time jumping straight upward as high as possible, turning to the R., landing with hands at sides, on toes, with knees bent—Two!
Straighten knees—Three!
Position—Four!
Try informal jump, turning all the way around in one count and landing lightly on the toes.

9. Suspension.

Repeat Schedule XI, Exercise 9.

10. Breathing—Feet.

Repeat Schedule I, Exercise 10.

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[1] See Halsey and Skarstrom: "Schoolroom Gymnastic Lessons."

### SCHEDULE XIII

1. General Organization.

   Marching—Facing—Two march steps sideward combined with facing. Marching sideward, cross L. foot in front and back. Step R. sideward, cross L. in front. Step R. sideward, cross L. in back, and repeat. (On last count, heels together.) Same L.

   Adapt to local school room or playground conditions.

2. Feet—General Posture.

   Standing Position.

   Arms side horizontal, place R. foot sideward—One!
   Arm rotation outward, turning palms up, with thigh rotation outward—Two!
   Return—Three!
   Position—Four!
   Same L.

3. Head—Upper Back.

   Stride Standing Position, Arms Side Horizontal.
   Trunk Forward, 45° Angle.

   Turn palms upward (keep upper back flat)—One!
   Return—Two!

4. Feet.

   Standing Position.

   Curl toes, touch R. heel forward—One!
   Push down on heel, turn front of foot towards body—Two!—Three!
   Position—Four!
   Same L.

   NOTE: To stretch the muscles at the back of leg.

5. Abdomen—Lower Back.

   Stride Standing Position, Hands on Abdomen.

   Trunk rotation R., bend trunk R., press hands to abdomen—One!
   Trunk bending forward, press hands to abdomen—Two!
   Trunk bending L., press hands to abdomen—Three!
   Position, pushing head up—Four!
   Same L.

   NOTE: Hand pressure on abdomen gives massage to abdominal muscles.

6. Breathing.

   Standing Position.

   Arm turning outward, breathe in—One!
   Return and Exhale—Two!

7. Big Muscle Group.

   Mimetic—Chest Throw Basket Ball.

Standing Position.

Hold the ball in front of the chest with both hands, elbows fully bent close to the body, place L. foot forward, knees slightly bent, weight forward on the balls of the feet—One! Throw the ball with a quick extension of the arms and body, jumping into the air—Two!

Repeat.

8. Jump.

Combination of Cut-Step Forward-Backward, Stride Stand and Step Hop.

Standing Position, Hands on Hips, Weight on L. Foot, Touch R. Toe Forward.

Cut-step forward-backward, hopping on R., raise L. backward, etc.—Four counts (see Schedule IV, Exercise 8).

Stride stand and together—Four counts.

Step hop R., step hop L.—Four counts (see Schedule XI, Exercise 1).

Stride stand and together—Four counts.

In Rhythm—Begin! (32 counts.)

9 Suspension. Have class in turn in twos, fours or sixes, as apparatus permits.

Passive Hanging on Bars or Horizontal Ladder, Hands about Three Feet Apart.

Contract abdominal muscles, flatten back, touch soles of feet together, separate knees—One!

Raise legs, knees separated, hold the soles of feet together—Two!

Return—Three!

Position—Four!

10. Breathing—Feet.

Repeat Schedule I, Exercise 10.

## SCHEDULE XIV

1. General Organization.

Marching—Facing—Single or double march steps combined with facing. Small running steps sideward R., cross L. in front and in back: step R. sideward, cross L. in front, step R. sideward cross L. in back and repeat (on last count, heels together). Same L.

2. Feet—General Posture.

Standing Position.

Arms side horizontal, place R. foot forward, toeing in—One!

Arms folded on top of head, push up against arms—Two!
Return—Three!
Position—Four!
Same L.

3. Head—Upper Back.
   Stride Standing Position, Arms Side Horizontal, Palms Up, Trunk Forward, 45° angle.
   Describe small arm circles backward (increase the size of the circle gradually)—One!—Two!—Three!—Four!
   NOTE: Keep upper back flat during the exercise, thus activating the muscles that attach to the shoulder blades (scapular adductors).

4. Feet.
   Standing Position.
   Curl toes R. foot, place R. foot across L. at right angle to L. heel (R. heel in contact with outer border of L. foot at the little toe region)—One!
   Hold—The entire outer border of R. foot in contact with the floor, toes curled, ball of foot turned to the rear—Two!—Three!
   Position—Four!
   NOTE: R. foot forces the twisting of L. leg outward and places the weight on the outer border of the L. foot.

5. Abdomen—Lower Back. (See Fig. 78, page 362.)
   a. Standing Position, Back to the Wall, One Foot or More from Wall. (If there is no other free and smooth wall space in the school room, use the door.) Have each pupil do the exercise in turn.
   b. Standing Position, Back to the Wall, One Foot or More from the Wall of the School House or from Hand Ball Back Stop. (Have the pupils do the exercise in turn, or in groups of six or eight, according to wall space available.)
   Bend the knees as if to sit—assume a sitting position with the entire back, shoulders and head touching the wall. Contract the abdominal muscles, flatten the back and press the back to the wall, straighten the knees slowly, taking small steps toward the wall, come to an erect position, keeping the entire back, shoulders and head in contact with the wall—5-10 counts. Assume sitting position on the wall and repeat.

6. Breathing.
   Standing Position.
   Arms side horizontal, palms up, breathe in—One!
   Return and Exhale—Two!

7. Big Muscle Group.
   Mimetic—Soccer—Free Kick.

Standing Position.

Run forward 4 steps, R.,L.,R.,L.—One!—Two!—Three—Four!

Kick R., swing the leg forward upward (use instep for kick)—Five!

R. foot position—Six!

Repeat.

8. Jump.

Jump Stride Stand with Alternate Leg Flinging Sideward.

Standing Position, Hands on Hips.

Jump to stride stand—One!

Heels together—Two!

Jump on R., flinging L. leg sideward—Three!

Heels together—Four!

Same L.

In Rhythm—Begin! (32 counts.)

9. Suspension.

Repeat Schedule XIII, Exercise 9.

10. Breathing—Feet.

Repeat Schedule I, Exercise 10.

## SCHEDULE XV

1. General Organization.

Marching—Facing—Single or double march steps combined with facing. Three small running steps sideward R. and hop, crossing L. in front; step sideward R., cross L. in front, step sideward R., hop on R. Same L. Three small running steps R. and hop, crossing L. in back; step sideward R., cross L. in back, step sideward R., hop on R. Same L.

Adapt to local school room or playground conditions.

2. Feet—General Posture.

Standing Position, Hands on Neck.

Place R. foot sideward—One!

Arm stretching to diagonal (sideward) with heel raising, turning toes in—Two!

Return—Three!

Position—Four!

Same L.

3. Head—Upper Back.

Stride Standing Position.

Arms side horizontal, pinch shoulder blades together (do not raise or move shoulders backward, limit the action to the mus-

cles that attach to the inner border of the shoulder blades) —One!
Place hands on neck (hold shoulder blade position)—Two!
Arms side horizontal (hold shoulder blade position)—Three!
Position—Four!

NOTE: See Note, Schedule IV, Exercise 3.

4. Feet.
   a. Standing Position, Grasp Seat for Support.
   b. Standing Position, Hold Hand of Pupil Opposite for Support.
      Curl toes, turn R. foot in until toes of R. foot touch L.—One!
      Raise R. leg, cross in front of L., knee height and as far to L. as possible—Two!
      Return—Three!
      Position—Four!
      Same L.

NOTE: Kicking across the opposite leg in this position places weight on the outer border of the supporting foot.

5. Abdomen—Lower Back.

Lean Stand, Facing Wall, Stand Arm's Distance Away, Body Inclined Slightly Forward, Back Flat, Hands on Wall, Shoulder High and Shoulder Width Apart, Elbows Slightly Bent, Feet Toeing Forward about Two and a Half Feet from Wall.

Contract abdominal muscles, bend elbows, let the body fall forward until the chest almost touches the wall—One!
Return—Two!

NOTE: The distance of the individual pupil from the wall to be determined by the strength of the individual's abdominal muscles. Keep the body in a straight line throughout the exercise. Place the feet closer to the wall if abdominal muscles are relaxed, and if pupil arches lower back in taking the exercise.

6. Breathing.

Standing Position.
Breathe in as if smelling a flower—One!
Exhale through the mouth as if through a straw—Two!

7. Big Muscle Group.

Mimetic—Tennis Serve.
Stride Standing Position, L. Shoulder Forward.
Place the weight on the R. foot, head well back, facing the court, racquet in R. hand, R. upper arm shoulder high, arm bent at elbow, L. arm extended forward holding the ball —One!
Serve—Swing the racquet forcefully overhead and down, finishing across the body, with weight on the L. foot—Two!

8. Jump.
   Cut-Step Forward-Backward with Alternate Leg Forward.
      Standing Position, Hands on Hips, Weight on L. Foot, Touch R. Toe Forward.
         Place weight on R. with a hop, raise L. backward—One (supporting foot toeing forward, hopping lightly on the ball of foot).
         Hop on R., swing L. leg forward—Two!
         Change weight to L., with a hop, R. leg backward—Three!
         Hop on L., swing R. leg forward—Four!
         In Rhythm—Begin! (32 counts.)

9. Suspension (have class in turn in twos, fours or sixes as apparatus permits).
   Passive Hanging on Bars or Horizontal Ladder, Hands about Three Feet Apart.
      Place soles of feet together, turn the knees outward, draw the feet towards the body—One!
      Extend the legs diagonally outward—Two!
      Feet together—Three!
      Hold—Four!
      Repeat.

10. Breathing—Feet.
    Repeat Schedule I, Exercise 10.

### SCHEDULE XVI

1. General Organization.
   Marching—Facing—Single or double march steps combined with facing. Three small running steps sideward R., and hop, crossing L. in front—4 counts. (See Schedule XV, Exercise 1.)
   Two step hops—4 counts.
   Same L.
   Three small running steps sideward R. and hop, crossing L. in back—4 counts.
   Two step hops—4 counts.
   Same L.
      Adapt to local school room or playground conditions.

2. Feet—General Posture.
   Standing Position.
      Arms bend, place R. foot forward—One!
      Stretch arms to "Tall Walk" with heel raising, turning toes in—Two!
      Return—Three!
      Position—Four!
      Same L.

NOTE: See Note, Restricted Physical Education High School, Schedule IX, Exercise 2b, page 270.

3. Head—Upper Back.

Lean Stand, Facing Wall. Stand Arm's Distance Away, Body Inclined Slightly Forward, Back Flat, Hands on Wall Shoulder High and Shoulder Width Apart, Elbows Slightly Bent, Feet Toeing Forward About Two and a Half Feet from the Wall.

Drop head forward—One!

Push head back against imaginary resistance—Two! (Prolong interval for count to represent time element.) Teacher may give actual resistance in this exercise.

4. Feet.

Standing Position, Hands on Hips.

Place R. foot forward, toeing forward, weight on outer border—One! Bend R. knee, incline the body forward over the bent knee (R. charge position, body in line with rear leg), both feet toeing forward—Two!

Hold the charge position, keep L. heel on the floor to stretch the L. heel cord—Three! Four! Five!

Position—Six!

Same L.

5. Abdomen—Lower Back.

Prone Fall Position, Using Desks in Room or Benches on Playground. (See Fig. 62, page 198.)

Contract the abdominal muscles, bend elbows, let the body fall forward as far as possible without arching the back—One!

Return—Two!

NOTE: Keep head, trunk and legs in a straight line throughout the exercise.

6. Breathing.

Standing Position.

Arm turning outward, breathe in—One!

Return and exhale—Two!

7. Big Muscle Group.

Mimetic—Breast Stroke Swimming (Arms Only).

Standing Position, Arms Vertical, Palms Forward, Forefingers Touching (head between the arms imitating body and arms in straight horizontal line in water).

Arms sideward, palms back—One!

Draw elbows to side, forefingers touch in front of chest—Two!

Arms Vertical—Three!

Repeat.

8. Jump.
    Jump Forward Stride with Alternate Leg Flinging Sideward.
        Standing Position, Hands on Hips.
            Jump forward stride, place R. foot forward, L. foot backward—One! (Feet toeing forward, weight evenly divided.)
            Heels together—Two!
            Jump on R., flinging L. leg sideward—Three!
            Heels together—Four!
            In Rhythm—Begin! (32 counts.)
            Same L.

9. Suspension.
    Repeat Schedule XV, Exercise 9.
    Progress to Traveling.[1]
    1. Hang, travel walking sideward on rail.
    2. Hang, travel hand over hand on both rails.
    3. Hang, travel hand over hand on rings.
    4. Hang, travel double jumping on rings.
    5. Hang, travel double jumping on both rails.
    6. Ring travel.

10. Breathing—Feet.
    Repeat Schedule I, Exercise 10.

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[1] See L. C. Staley: "Individual and Mass Athletics."

# CHAPTER XXVI

## Corrective Physical Education

## ELEMENTARY AND SMALL HIGH SCHOOL—SCHEDULES OF EXERCISES—INTRODUCTORY NOTES

I. Classification of Students.

Students Assigned to Corrective Physical Education:

1. Assignment.
    - a. Growth handicaps:
        1. Physiological (Functional).
            - a. Heart.
            - b. Lungs.
            - c. Endocrines.
            - d. Observation after illness.
        2. Anatomical (Functional).
            - a. Lithe and Stout Types.
                1. Anteroposterior:
                    1. Forward head.
                    2. Round shoulders (shoulder girdle).
                    3. Kyphosis (Round back—total—dorsal and lumbar region).
                    4. Kypholordosis (Round hollow back).
                    5. Lordosis (Hollow back—lumbar region).
                    6. Flat chest.
                    7. Protruding abdomen.
                    8. Pelvis.
                        - a. Exaggeration of anteroposterior tilt.
                    9. Feet.
                        - a. Ankle pronation.
                        - b. Flat feet, 1st, 2nd and 3rd degrees.
                2. Lateral defects (usually associated with one or more anteroposterior defects).
                    1. Scoliosis (Postural).
                    2. Lateral tilts and torsions of pelvis.
                3. General (usually associated with anteroposterior and lateral defects).
                    1. Incorrect balance.
                    2. Relaxed posture.
                    3. Muscular insufficiency due to over fatigue and under nourishment.

- b. Medium Type:
    - 1. Postural conditions as above.

      NOTE: Medium type students unless characterized by exaggerated postural conditions should be able to correct same in regular physical education class. (Otherwise classify under "Stout Type—Corrective.")

II. Equipment.

Room—Free Wall Space—Tilted Balance Boards. Equipment for Exercises in recumbent and sitting positions (canvas, mats, benches). Equipment for Suspension Exercises. See Equipment, Chapter XV, page 131.

III. Work Outlined.

Emphasis is placed on exercises to establish a correct body balance by first developing the individual segments of the body.

Exercises primarily in recumbent and sitting positions. (See Value of Recumbency, Chapter XI, page 102.)

Emphasis on Foot Exercises.

Emphasis on Suspension Exercises.

IV. Time Required for Schedules.

- A. Schedule is planned for twenty-minute period. (Time for passing not included.)
- B. Suggested division of schedule if material is too much to be covered in one twenty-minute period:
    - 1. First presentation of lesson: Exercises 1, 2, 3, 4, 5, 6, 8, 9, 12.
    - 2. Second presentation of lesson: Exercises 1, 2, 3, 4, 5, 7, 10, 11, 12.

  The division provides for daily presentation of exercises for:

| | |
|---|---|
| 1. | Foot. |
| 2. | Leg. |
| 3-4. | Lower Back and Abdomen. |
| 5. | Breathing. |
| 6 or 7. | Upper Back. |
| 8 or 10. | Big Muscle (either trunk or suspension). |
| 9 or 11. | Balance Board Exercise or Game. |
| 12. | Breathing. |

Rest and relaxation have a definite value in the execution of a corrective physical education lesson. Some time should be devoted to rest between the exercises. A great deal of attention should be paid to correct detail in the execution and form of each exercise.

V. Number of Times per Week.

The recommendation is made that the schedule be given two or three times a week according to the needs of the class and the results obtained. (See Monthly, Weekly and Daily Schedules, Chapter XVII, page 174.)

VI. Progression to New Schedules.

One month should be spent on each schedule.

Sufficient time should be spent on the exercises to secure a complete understanding of the subject matter presented. For additional material see Chapters XXIV, XXVII, XXVIII and XXIX.

VII. *Fundamental Positions.* (*For detailed Fundamental and Starting Positions, description and illustration see* Chapter XVIII, page 187.)

In all fundamental positions, in all exercises, hands are at the sides unless otherwise designated.

VIII. *Nomenclature.* (*For detailed Nomenclature, discussion and directions see* Chapter XVIII, page 203.)

A. Statement of Exercise.

Exercises are stated as clearly and as concisely as possible to convey the meaning desired. (See Methods, Chapters XIX, XX and XXI.)

B. "Return" and "Position" are used as preparatory commands in all exercises for the commands of execution "Three" and "Four."

1. "Return" indicates the return from the position assumed on count "Two!"
2. "Position" indicates the return to the starting position.
3. "Relax" may be substituted for one or both "Return" and "Position."

C. Presentation of Exercises.

1. "On Command."

   The general recommendation is made that the exercises be given "On Command" so that the class may learn to execute the exercise in good form with clean-cut definite movements.

2. "In Rhythm."

   Give the exercises "In Rhythm" when it is possible for the class to execute in good form and with clean-cut definite movements.

3. Formal presentation of the exercises without the use of a "Command" is also recommended. (See Methods, Chapter XXI, page 219.)
4. Special Rhythms.

   Special rhythms for certain exercises are recommended. (See Methods, Chapter XXI, page 221.) (See Foot Exercises, Chapter XXVIII, page 414.)

5. Special Commands.

   Words suggesting the positions to be assumed are recommended for "Commands." (See Methods, Chapter XXI, page 220.) (See Exercises, Chapter XXVIII, page 417.)

6. Breathing Exercises.

   Breathing exercises are not given in a set rhythm established by the teacher.

D. Number of Repetitions.

   The number of repetitions for each exercise is not recommended for the corrective group. The number should vary according to the needs of the group, and the achievement of the group in the execution of the work. An average number of repetitions for each exercise is four times R. and four times L.

IX. Class Organization.

A. Number of Pupils in Class.

   The corrective group should have in it not more than twenty pupils.

B. Squad Organization.

   1. Lithe and stout types, postural defects.
      a. Lithe type.
         Squad 1. Extreme foot condition.
         Squad 2. Round Back.
         Squad 3. Round Hollow Back—Hollow Back.
         Squad 4. L. shoulder high (Postural).
      b. Stout type.
         Squad 5. Round Hollow Back—Foot conditions.
   2. Rest Cases.
      a. Extreme under-nourishment.
      b. Heart cases.
      c. Structural kyphosis (referred).
      d. Structural scoliosis (referred).
      e. Infantile and spastic paralyses (referred).
      f. Torticollis (referred).
   3. Miscellaneous—Students needing specific directions.
      a. R. shoulder high (Postural). (See Schedules, Chapter XXVII, page 392.)
      b. Total Round Back. (See Schedules for Specific Conditions, Chapter XXVII, page 384.)
      c. Miscellaneous, as knockknee, claw feet, etc. (See Schedules for Specific Conditions, Chapter XXVII, pages 400, 401.)

C. Class Formation.

   1. Assignment for Classwork.

      Squad 1—Bench 1—Lithe type—Extreme foot conditions.

      Squad 2—Bench 2—Lithe type—Round Back.

Squad 3—Bench 3—Lithe type—Round Hollow Back —Hollow Back.

Squad 4—Bench 4—Lithe type—L. shoulder high (Postural).

Squad 5—Bench 5—Stout type—Round Hollow Back —Foot conditions.

Similar assignment on canvas (or mats) and on suspension apparatus.

Squads report each day to the same place.

It is possible with the class arranged in squads according to postural condition for the teacher to pay attention to squad and to individuals in emphasizing certain points. For instance, when the Head and Upper Back exercises are being given, the teacher may help especially "Squad 2, on Bench 2"—pupils with Round Back and Forward Head. In all the exercises the teacher may take care to see that the shoulders of pupils in "Squad 4—L. shoulder high" are in correct alignment. (See Exercises for Specific Conditions, Chapter XXVII, page 391.) There should be no suspension work for "Squad 5—Stout Type." There should be no suspension work for extremely flexible cases.

X. General Aims of Schedules.

- A. To give fundamental work to correct the individual segments of the body in relation to the general body alignment.
- B. The majority of exercises in the Recumbent and Sitting Positions to give maximum assistance in the correction of postural defects.
- C. Emphasis on Abdominal and Low Back Exercises, and Foot Exercises.
- D. Suspension and Game Work—Emphasis placed on Postural Values.

XI. Sequence of Exercises.

The exercises in this series are given in the following order: The teachers are urged to adapt the order to the needs and ability of the particular groups.

1. Rest—Feet.

   Foot exercises are given in a Sitting or Lying Position:

   1. To relieve fatigue and tension induced by the school program.
   2. To reduce joint, ligamentous and neural strain.
   3. To center the attention on the base of the body support in order to relate all upper segments to the correct skeletal alignment. (See Posture Gravity Lines, Chapter III, page 31.)

2. Knee Alignment.
    1. To stretch the muscles at the back of leg (hamstrings and heel cord.)
    2. To release the tension on the posterior knee ligaments in cases of hyperextension, commonly called back knee, usually incident to or associated with forward pelvis as occurs in round hollow back. This condition in generally relaxed types is commonly compensatory to faults above or below the knee.

3 & 4. Lower Back—Abdomen.

Exercises to strengthen lower back and abdominal muscles and to flatten the lumbar spine are given in a Recumbent Position, in a Sitting Position, and in a Standing Position with a broad base. (In progression.)

1. To reduce balance strain and for rest purposes.
2. To localize action of muscle groups.
3. To decrease the possibility for incorrect position with resultant low back strain.
4. To get strong abdominal action with less general body strain.
5. To improve organic function both circulatory and eliminatory.

5. Breathing.

Breathing follows the abdominal exercises due to the physiological necessity caused by the exercise of Big Muscle Groups. (See Correct Breathing, Chapter XII, pages 107-109). (See Breathing Exercises, Chapter XVIII, page 201.)

6. Upper Back—Chest.

Exercises are given in Recumbent Position, in Sitting Position and in Standing Position. (In progression.)

1. To correct faulty chest and upper back position.
2. To stretch tight pectorals.
3. To strengthen upper back muscles (especially the scapular adductors).

7. Head.
    1. Exercises in a Sitting and Standing Position. (In progression.)
        1. To correct faulty head position.
        2. To strengthen relaxed muscles at the back of the neck.

2. Correct Sitting Position—Check on position of segments of body (head, trunk, hips and feet) in the Sitting Position.
    1. In relation to each other.
    2. In relation to environment.

8, 9 & 10. General.
  1. Suspension.
    a. Stretching spinal structures secured by passive hanging.
    b. General strengthening.
    c. General flexibility.
    d. Stretching of chest muscles.
  2. Balance—Feet.
    a. Fundamental standing position corrected.
    b. Correct body balance.
    c. Inversion and adduction of feet.
    d. Passive stretching of peroneals.
  3. Game.
    a. General Postural.
    b. Recreational.
    c. Physiological.

**11.** Breathing—Feet.

Breathing exercise is given at the end of this schedule because of the physiological need for breathing after the Big Muscle and apparatus exercises.

A final check on the correct position of the feet is recommended at the end of each schedule.

### Corrective Physical Education
### Elementary School
### Schedule of Exercises

#### SCHEDULE I

1. Rest—Feet.
  Hook Lying Position.
  a. Curl toes—(keep heels and outside of feet stationary on floor)—One!
     Relax—Two!
  b. Curl toes—One!
     Turn balls of feet toward each other (keep heels stationary on floor)—Two!
     Balls of feet to floor—Three!
     Relax—Four!

NOTE: Replacing balls of feet to floor with heels firm activates the depressor of the front part of the foot (Peroneus Longus), thus improving the condition of the front support of the anterior arch.

c. Curl Toes—One! (See Fig. 83, page 393.)
Turn balls of feet toward each other (keep heels stationary on floor)—Two!
Bend ankles upward—Three!
Relax—Four!

NOTE: Flexing the toes relaxes the toe extensors, thereby throwing them out of action in association with the anterior tibial, thus obtaining localized action of the latter. Caution—do not use in extreme flexible flat feet with a very powerful anterior tibial. Too much supination of the front foot may be produced, thus relaxing the peroneus longus, which is essential to the maintenance of front foot pronation.

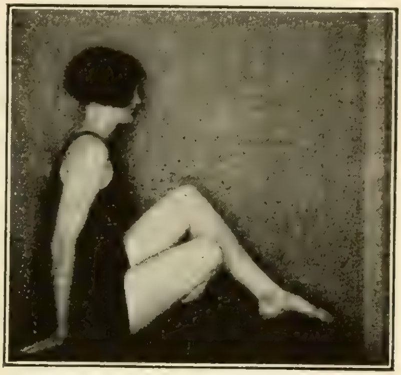

FIGURE 77

Feet—Hook Sitting Position—Curl Toes—Keep Heel and Outside of Foot Stationary on Floor

2. Knee Alignment (exercises to stretch hamstrings and tendo Achillis).
   Backward Lying or
   Long Sitting Position.
      Push down on R. heel (hold foot in inverted position with toes curled)—One!
      Relax—Two!
      Same L.

3. Lower Back.
   a. Hook Lying Position (see Fig. 71, page 304).
   Contract abdominal muscles and press back to floor—One!
   Relax—Two![1]
   b. Standing Position, One Foot or More from the Wall, Feet Toeing in.
   Bend the knees as if to sit—assume a sitting position with the entire back, shoulders and head touching the wall. Flatten the back, contract the abdominal muscles and press back to the wall. Straighten knees slowly, take small steps towards wall. Come to an erect position, keeping the entire back,

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[1] Thomas and Goldthwaite: "Body Mechanics and Health."

shoulders and head in contact with the wall. (5 to 10 counts.) Assume sitting position on wall and repeat.

4. Abdomen. (See Fig. 70, page 301.)
   Hook Lying Position.
   Place soles of feet together, separate knees, bend knees to chest, keeping back flat (keep hips on floor)—One!
   (Have the student count aloud or exhale.) (See Use Open Throat in all Leg Raising, Chapter XIII, page 118.)
   Hold and pull knees to chest, flatten the back and keep hips on the floor, grip thighs under the knees—Two!
   Return—Three!
   Position—Four!

   NOTE: Separating the knees before bending to chest activates the thigh abductors, thus preventing the adductors from aiding the psoas in tilting the pelvis forward and arching the lower back. (See Straight Leg Raising, Chapter XIII, page 115.)

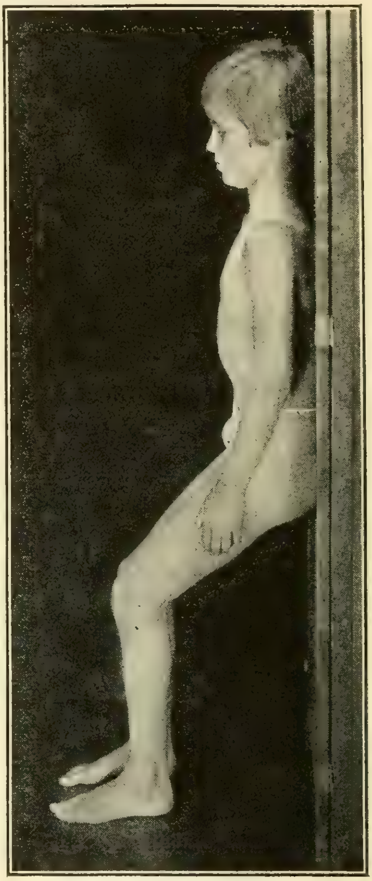

FIGURE 78
Lower Back—Flatten Back—Contract Abdominal Muscles—Press Back to the Wall. Note Foot Position

5. Breathing.
   Hook Lying Position.
   Breathe in as if smelling a flower—One!
   Exhale through the mouth as if blowing through a straw—Two!

   NOTE: The flower simile is used to do away with the incorrect use of the diaphragm that usually occurs when the emphasis is placed on *Deep* Breathing. Exhaling through the mouth is used to establish a rhythmical and controlled exhalation. (See Correct Breathing, Chapter XII, pages 107-109.) (See Breathing Exercises, Chapter XVIII, page 201.)

6. Upper Back—Chest.
   Hook Lying Position, Hands on Neck.
   Move arms to "arm bend" position and flatten back (keep wrists on floor)—One!

Hold—Two!

Return the hands to position on neck informally, not to count. and repeat the exercise.

Note: To make the exercise stronger imagine resistance against the arms as pupils are pulling them into "arm bend" position.

7. Head.

Stride Sitting Position on Benches, Feet Toeing Forward—Check on Correct Sitting Position—Head, Trunk and Hips in Correct Alignment. (See Chapter III, page 33.)

Cross Sitting Position.

Push head up, chin in, stretch spine (stretch upward as tall as possible), contract abdominal muscles, flatten back—One!

Return—Two!

Note: Pushing the head up, chin in, strongly stretching the spine—spinal push up—brings about a correct alignment of head, trunk and hips. (See Spinal Push Up, Chapter XVIII, page 207.) (See Posture Cues, Chapter XIX, page 210.)

8. Trunk.

Stride Sitting Position on Bench, Feet Toeing Forward, Hands on Hips.

Cross Sitting Position, Hands on Hips.

Bend trunk R.—One!

Position—Two!

Same L.

9. Balance—Feet.

Standing Position on Tilted Balance Boards. (See Tilted Balance Boards, Chapter XI, page 97.)

Walk by file, in rhythm with posture boards on heads on tilted balance boards—One!—Two!—Three—Four!

10. Suspension.

Standing Position, Facing Bars.

Climbing upward R. foot on first bar, R. hand shoulder high—One!

L. foot and L. hand one bar higher—Two!

Continue upward R.—Three!

Continue upward L.—Four!

Passive hanging back to bars, hands about three feet apart—8 counts.

Return—4 counts (given slowly to allow relaxation for passive stretching).

Note: Passive hanging, back to bars, hands as far apart as possible to prevent stretching of scapular adductors (rhomboids) and to secure maximum stretching of the pectorals.

11. Ten Steps with Posture Element. (Chapter XXIX, page 449.)

12. Breathing—Feet.

Standing Position. (See Fig. 63, page 249.)

Arm turning outward, breathe in, with thigh rotation outward (turn knees out, grip buttocks together, twisting thighs outward—keep big toe joints on the floor)—One!

Return and exhale—Two!

NOTE: See Grip Buttocks, Chapter XVIII, page 206.

### SCHEDULE II

1. Rest—Feet.

a, b, and c as Schedule I.

d. Prone Lying Position, Heels Apart, Toes Touching.

Grip buttocks together, rotate thighs outward until heels touch—One!

Relax—Two!

2. Knee Alignment. (Exercises to stretch hamstrings and tendo Achillis.)

Long Sitting Position.

Cross R. foot over L., push down on R. heel, turn front of foot in—One!

Raise L. leg—Two!

Lower—Three!

Relax—Four!

Same R.

3. Lower Back.

Hook Lying Position, Hands on Neck.

Contract abdominal muscles and raise head slightly forward (keep low back flat—keep arms on floor)—One!

Relax—Two!

NOTE: Head raising forward activates the abdominals in flexing the spine forward, thereby flattening the back.

4. Abdomen.

Hook Lying Position, Arms "T" Position.

Place soles of feet together, separate knees—One!

Raise legs, knees bent and separated, to chest (keep hips on floor)—Two! (Have the student count aloud or exhale.)

Return—Three!

Position—Four!

NOTE: Arms "T" Position stretches chest muscles. For leg abduction see Note, Schedule I, Exercise 4.

5. Breathing.

Hook Lying Position.

Breathe in as if smelling a flower—One!

Exhale through the mouth as if blowing through a straw—Two!

6. Upper Back—Chest.
   Hook Lying Position, Arms Diagonal.
   Bring arms to arm bend position vs. imaginary resistance (keep back flat on floor—keep elbows on floor)—One!
   Hold—Two!
   Return arms to diagonal informally and repeat.

7. Head.
   Stride Sitting on Benches, Feet Toeing Forward, Hands on Hips—Check on Correct Sitting Position. (See Chapter III, page 33.) Cross Sitting Position, Hands on Hips.
   Drop head forward in relaxed position, push head back vs. imaginary resistance (keep abdominal muscles tense—lower back flat)—One!
   Hold—Two!
   Repeat.

8. Trunk.
   Stride Sitting on Benches, Feet Toeing Forward, Arms Side Horizontal.
   Cross Sitting on Floor, Arms Side horizontal.
   Bend trunk sideward R., touch R. hand to floor (bend directly sideward, keeping head in line with trunk)—One!
   Return—Two!
   Same L.

9. Balance—Feet.
   Standing Position on Tilted Balance Boards.
   Raise R. leg forward (turn foot towards body)—One!
   Step—Two!
   Same L.—Walk across board.

10. Suspension.
    Standing Position, Facing Bars.
    Climbing upward R. foot on first bar, R. hand shoulder high—One!
    L. hand and L. foot one bar higher—Two!
    Continue upward—Three!
    Continue upward—Four!
    Passive hanging back to bar—Swing to R. and L.—8 counts. (Get as much range of motion as possible at waist line.)
    Return—4 counts.

11. Game.
    Up Jenkins. (See Chapter XXIX, page 462.)
    Newcomb. (See Chapter XXIX, page 445.)

12. Breathing—Feet.
    Repeat Schedule I, Exercise 12.

### SCHEDULE III

1. **Rest**—Feet.
   a, b, and c as Schedule I.
   d. Hook Lying Position.
   Separate knees, raise arches, keep heels and toes stationary on floor. (Separate knees only as far as possible, keeping heels and toes stationary on floor.)—One!
   Return—Two!

2. Knee Alignment. (Exercises to stretch hamstrings and tendo Achillis.)
   Backward Lying Position.
   Curl toes, push down on heels (hold toes curled) and separate legs—One! (Leg abduction.)
   Return—Two! (Leg adduction.)

3. Lower Back.
   Hook Lying Position, Hands on Top of Head.
   Bend trunk to R. (let elbows, shoulders and back slide over the floor)—One!
   Return—Two!
   Same L.

4. Abdomen.
   Hook Lying Position, Arms "T" Position.
   Place soles of feet together, separate knees and raise legs, knees bent and separated, to chest (keep hips on floor)—One! (Have student count aloud or exhale.)
   Raise head (keep arms on floor)—Two! (See Fig. 81, p. 386.)
   Return head—Three!
   Position—Four!

5. Breathing.
   Hook Lying Position.
   Breathe in as if smelling a flower—One!
   Exhale through the mouth as if blowing through a straw—Two!

6. Upper Back—Chest.
   Prone Lying Position, Hands Clasped in Rear.
   Pinch shoulder blades together (keep head on floor, upper back flat, arms relaxed—do not raise or pull back the shoulders—limit the action to the shoulder blade adductors)—One!
   Hold—Two!—Three!
   Position—Four!

   NOTE: Keeping the head on the floor and the hands interlocked with arms relaxed makes it easier to localize the action to the shoulder blade adductors. (See Shoulder Blade Pinch, Chapter XVIII, page 207.)

7. Head.

Stride Sitting on Benches, Feet Toeing Forward, Hands Clasped in Rear—Check on Correct Sitting Position. (See Chapter III, page 33.)

Cross Sitting Position, Hands Clasped in Rear—Check on Correct Sitting Position. (See Chapter III, page 33.)

Bend head sideward R. (try to touch R. ear to shoulder)—One!
Return—Two!
Same L.

Note: Hands clasped in rear causes fixation of the shoulders so that the sideward bending of the head must be done without raising the shoulders.

8. Trunk.

Stride Sitting on Benches, Feet Toeing Forward, Arms Side Horizontal.

Cross Sitting Position, Arms Side Horizontal.

Twist trunk R. and clap R. hand with L.—One!
Return—Two!
Same L.

9. Balance—Feet.

Standing Position on Tilted Balance Board.

Raise R. leg forward. (Turn foot towards body)—One!
Raise R. leg backward—Two!
Raise R. leg forward (turn foot toward body)—Three!
Step—Four!
Same L.—Walk across board.

10. Suspension.

Standing Position, Facing Bars.

Climbing upward R. foot on first bar, R. hand shoulder high—One!
L. foot and L. hand one bar higher—Two!
Continue upward R.—Three!
Continue upward L.—Four!
Passive Hanging, Back to Bars, Hands about Three Feet Apart.
Contract abdominal muscles, flatten back (keep head in line with trunk)—One!
Thigh rotation outward (hold abdominal contraction)—Two!
Return (hold abdominal contraction)—Three!
Position—Four!
Return—4 counts.

11. Game.

Circle Quiet Foot Game. (See Chapter XXIX, page 457.)

12. Breathing—Feet.

Repeat Schedule I, Exercise 12.

### SCHEDULE IV

1. Rest—Feet.
   a, b, and c as Schedule I.
   d. Hook Lying Position.
      Place R. foot on L. knee—One!
      Curl toes, bend ankles toward knee—Two!
      Turn foot towards face (keep ankle bent) so that pupil can see entire bottom of foot (let R. knee swing away from body)—Three!
      Replace foot on floor in corrected position—Four!
      Same L.
2. Knee Alignment. (Exercises to stretch hamstrings and tendo Achillis.)
   Backward Lying Position, Knees Separated and Bent to Chest.
      Straighten both legs upward, steady thighs with hands, curl toes and bend ankles toward body—One!
      Hold—Stretch—Two!—Three!
      Position—Four!
      NOTE: To stretch tendo Achillis.
3. Lower Back.
   a. Hook Lying Position, Arms to Diagonal.
      Twist trunk by rolling movement forward to R., carry L. arm over body to floor on the opposite side (twist as far as possible, keeping right arm and shoulder stationary)—One!
      Return—Two!
      Same—L.
   b. Prone Lying Position.
      Touch feet to buttocks, grasp feet with hands and press legs to buttocks—One!
      NOTE: Stretch the muscle that tilts the pelvis forward (psoas magnus). If exercise seems to exaggerate hollow back condition, contract the abdominal muscles first to control the tilt of the pelvis.

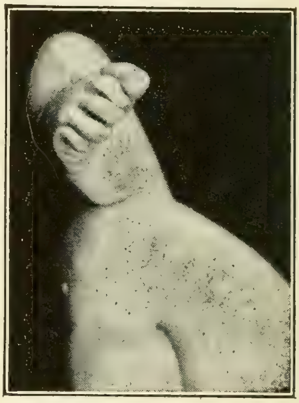

FIGURE 79

Feet—Hook Lying Position, R. Foot on L. Knee—Curl Toes—Bend Ankle Upward—Turn Foot Towards Face

   c. Standing Position, One Foot or More from the Wall, Feet Toeing In. (See Fig. 78.)
      Bend the knees as if to sit—assume a sitting position with the entire back, shoulders and head touching the wall. Flatten the back, contract the abdominal muscles and press back to wall. Straighten knees slowly, take small steps

towards wall. Come to an erect position, keeping the entire back, shoulders and head in contact with the wall. (5 to 10 counts.) Assume sitting position on wall and repeat.

4. Abdomen.
   Hook Lying Position, Arms to Diagonal.
      Separate knees and raise legs to chest—One! (Have student count aloud or exhale.)
      Lower both legs to floor on R.—Two!
      Return—Three.
      Position—Four!
      Same L.

5. Breathing.
   Hook Lying Position.
      Breathe in as if smelling a flower—One!
      Exhale through the mouth as if blowing through a straw—Two!

6. Upper Back—Chest.
   Prone Lying Position
      Arms side horizontal (keep head on the floor)—One!
      Turn palms upward (keep head on the floor)—Two!
      Return—Three.
      Position—Four!

7. Head.
   Stride Sitting on Benches, Feet Toeing Forward, Hands on Hips —Check on Correct Sitting Position.
   Cross Sitting Position—Hands on Hips—Check on Correct Sitting Position.
      Head rotation to R. (Make the head go in a complete circle starting forward to R., backward to L. and forward again)—One!—Two!—Three!—Four!
      Same L.

8. Trunk.
   Stride Sitting on Benches, Feet Toeing Forward, Hands on Neck.
   Cross Sitting on Floor, Hands on Neck.
      Twist trunk R. (keep elbows well back)—One!
      Trunk bending forward over R. knee (keep elbows well back)—Two!
      Return—Three.
      Position—Four!
      Same L.

9. Balance—Feet.
   Standing Position on Tilted Balance Board.
      Bend R. knee upward, turn knee out—One!
      Step—Two!
      Same L.—Walk across board.

10. Suspension.
    Standing Position, Facing Bars.
        Climbing upward R. foot on first bar, R. hand shoulder high—One!
        L. foot and L. hand one bar higher—Two!
        Continue upward R.—Three!
        Continue upward L.—Four!
        Passive Hanging, Back to Bars, Hands about Three Feet Apart
        Contract abdominal muscles and flatten back—One!
        Raise R. leg sideward—Two!
        Return—Three.
        Position—Four!
        Same L.
        Return—4 counts.
11. Game.
    I Say Stoop, I Say Stand, on Balance Board, Chapter XXIX, page 465.
    Six Hole Basket Ball, Chapter XXIX, page 447.
12. Breathing—Feet.
    Repeat Schedule I, Exercise 12.

### SCHEDULE V

1. Rest—Feet.
    a. Hook Lying Position.
        Curl toes (keep heels and outside of feet stationary on floor) —One!
        Relax—Two!
    b. Hook Lying Position, Touch Soles of Feet Together.
        Bend ankles upward—One!
        Return—Two!
    c. Long Sitting Position. (See Fig. 84, page 394.)
        R. leg crossed over L., R. foot circling, keeping toes curled, make a circle, starting outward-downward, inward, upward (strong emphasis on in and up movement, none on out and down)—One! Two! Three!—Four!
        Repeat.
        This exercise can be defined as follows, foot circling inward by count.
        Toes curled, foot circling, starting out-down—One!
        Inward (strongly)—Two!
        Upward (strongly)—Three!
        Relax—Four!
        Note: Strengthening the Tibials and *not* the Gastrocnemius and Peroneals.

d. Cross Sitting Position. R. Leg over L. (or L. over R.).
Curl toes R.—One!
Draw toes of R. foot toward L. knee—Two!
Relax—Three!
Same L.

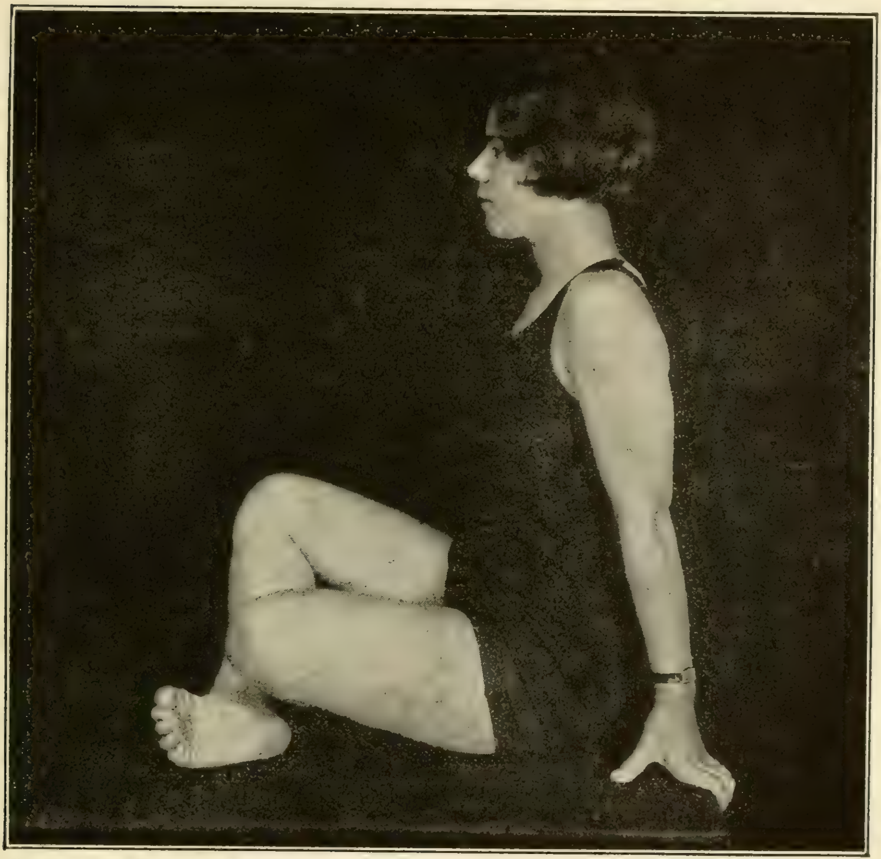

FIGURE 80

**Feet—Curl Toes—Draw Toes R. Foot Toward L. Knee**

2. Knee Alignment (Exercises to stretch hamstrings and tendo Achillis).

Side Lying Position, Supporting Knee Bent.
Lying on right side, R. knee bent, bend L. ankle upward, raise L. leg forward as far as possible—One!
Return—Two!
Same lying on L. side.

3. Lower Back.
   Prone Lying Position, Hands under Abdomen.
      Separate legs (leg abduction)—One!
      Return—Two!
4. Abdomen.
   Side Lying, Supporting Knee Bent.
      Lying on R. side, R. knee bent, L. leg circumduction—One!—Two!—Three!—Four!
      Repeat.
      Same L.
5. Breathing.
   Hook Lying Position.
      Hand turning outward, breathe in—One!
      Return and Exhale—Two!
6. Upper Back—Chest.
   Stride Sitting on Benches, Feet Toeing Forward, Arms Side Horizontal, Palms Up.
   Cross Sitting Position, Arms Side Horizontal, Palms Up
      Describe small arm circles backward (keep upper back flat). (Increase the size of circle gradually)—One! Two!—Three!—Four!
7. Head.
   Stride Sitting on Benches, Feet Toeing Forward, Hands on Thighs—Check on Correct Sitting Position.
   Cross Sitting Position, Hands on Hips—Check on Correct Sitting Position.
      Use hand position as support, push head up, stretch the spine (do not raise shoulders)—One!
      Return—Two!
8. Trunk.
   Stride Sitting on Benches, Feet Toeing In, Hands on Abdomen.
   Cross Sitting Position on Floor, Hands on Abdomen.
      Bend trunk forward—One!
      Twist trunk R.—Two!
      Return—Three!
      Position—Four!
9. Balance—Feet.
   Standing Position on Tilted Balance Board.
      Touch right heel forward—One!
      Step—Two!
      Same L.—Walk across the board.
10. Suspension.
   Standing Position, Facing Bars.
      Climbing upward, R. foot on first bar, L. hand shoulder high—One!
      L. foot and R. hand one bar higher—Two!

Continue upward R.—Three!
Continue upward L.—Four!
Passive Hanging, Back to Bars, Hands about Three Feet Apart.
Leg separation (abduction)—One!
Position, heels together—Two!
Repeat.
Return—4 counts.

**11.** Game.
Stride Stand.
Over and Under Posture Board Relay, Chapter XXIX, page 455.

**12.** Breathing—Feet
Repeat Schedule I, Exercise 12.

### SCHEDULE VI

1. Rest—Feet
a, b, and c as Schedule V.
d. Hook Sitting Position, Feet Toeing In.
Curl toes R. (keep heels stationary on floor)—One!
Turn R. foot towards L. foot (keep outer border of foot on floor)—Two!
Hold—Three!—Four! (Try to hold in this position so that teacher or other pupil cannot pull the foot out of position.)
Same L.

2. Knee Alignment. (Exercises to stretch hamstrings and tendo Achillis.)
Long Sitting Position.
Bend trunk forward, touch R. hand to L. foot, twist trunk to L., place L. hand on hip—One!
Return—Two!
Same L.

3. Lower Back.
Prone Lying Position, Arms Side Horizontal.
Bend trunk R., move R. leg (let R. leg slide over floor) sideward to R. (abduct), R. hand to R. leg—One!
Return—Two!
Same L.

4. Abdomen.
Side Lying Position.
Side lying R., bend both knees slightly, R. leg back, L. leg forward, separate legs as far as possible (left knee straight)—One!
Heels together—Two! (scissors kick in swimming).
Same L.

5. Breathing.
    - Hook Lying Position.
        - Arm turning outward, breathe in—One!
        - Return and Exhale—Two!
6. Upper Back—Chest.
    - Stride Sitting Position on Benches, Feet Toeing Forward. Arms to Diagonal.
    - Cross Sitting, Arms to Diagonal.
        - Bring arms to arm bend position (as if against imaginary resistance, keep back flat)—One!
        - Hold—Two!
        - Return arms to diagonal informally and repeat.
7. Head.
    - Stride Sitting on Benches, Feet Toeing Forward, Hands on Top of Head—Check Correct Sitting Position.
    - Cross Sitting Position, Hands on Top of Head.
        - Push up on hands, stretch the spine, contract the abdominal muscles, flatten back—One!
        - Twist head R.—Two!
        - Return—Three!
        - Position—Four!
8. Trunk.
    - Stride Sitting Position on Benches, Hands on Abdomen, Feet Toeing In.
    - Cross Sitting Position on Floor, Hands on Abdomen.
        - Bend trunk forward—One!
        - Trunk bending R., press hands to abdomen, keep forward bend position—Two!
        - Return—Three!
        - Position—Four!
9. Balance—Feet.
    - Standing Position on Tilted Balance Board.
        - Touch R. heel forward—One!
        - Raise R. leg backward, touch R. toe in rear—Two!
        - Touch R. heel forward—Three!
        - Step—Four!
        - Same L.—Walk across board.
10. Suspension.
    - Standing Position, Facing Bars.
        - Climbing upward R. foot on first bar, L. hand shoulder high—One!
        - L. foot and R. hand one bar higher—Two!
        - Continue upward R.—Three!
        - Continue upward L.—Four!
        - Hanging Back to Bars, Both Feet Resting on Bar.

Release R. foot from bar and let R. foot hang free and close to the bar—One!
Same L.—Two!
Hip raising, replace R. foot—Three!
Same L.—Four!
Repeat.
Return—4 counts.

NOTE: Hip raising in hanging position activates the Quadratus Lumborum and side abdominals.

11. Game.
    Tap Tap Partner with Feet, Chapter XXVIII, page 416.
    Volley Ball Catch, Chapter XXIX, page 446.

12. Breathing—Feet.
    Repeat Schedule I, Exercise 12.

### SCHEDULE VII

1. Rest—Feet.
    a, b, and c as Schedule V.
    d. Sitting Facing Sideward (pupils side by side) on Benches, Feet on Floor, Two Inches Apart, Toeing Forward.
    R. foot, curl toes and pick up marble (keep heel stationary on floor)—One! (See Fig. 85, page 394.)
    Bring R. foot to L. knee and place marbles in L. hand—Two!
    Replace R. foot—Three!
    Same L.

    NOTE: Placing marble in hand on opposite side gives added stretch to muscles on the outside of the leg.

2. Knee Alignment. (Exercises to stretch hamstrings and tendo Achillis.)
    Sitting Facing Sideward (pupils side by side) on Benches. Feet on Floor, Two Inches Apart, Toeing Forward, Hands at Sides Grasping Bench.
    Curl toes, stretch legs forward, push down on heels, bend ankles towards body—One!
    Return—Two!

3. Lower Back.
    Side Lying Position, Supporting Knee Bent.
    Side Lying R., R. knee bent, raise trunk and L. leg, L. leg upward (abduction)—One!
    Return—Two!
    Same L.

4. Abdomen.

   Kneeling on One Knee—Kneel R. Knee, R. Foot Resting in Inversion, L. Knee at Right Angle and Straight Forward, L. Foot Toeing In, Arms Folded Across Abdomen, Low Down.

   Bend trunk forward—One!
   Twist trunk R.—Two!
   Return—Three!
   Position—Four!
   Same L.

   NOTE: Twisting the trunk in the forward bend position, with the arms folded on the abdomen, gives massage to abdominal muscles. Kneeling on one knee gives a broad base for trunk rotation.

5. Breathing.

   Hook Lying Position.

   Arm turning outward, breathe in—One!
   Return and Exhale—Two!

6. Upper Back—Chest.

   Stride Sitting on Benches, Feet Toeing In, Hands on Hips, Cross Sitting Position.

   Bend trunk forward (keep upper back flat)—One!
   Drop head forward—Two!
   Pull chin strongly back—Three!
   Return trunk—Four!

7. Head.

   Stride Sitting Position on Benches, Feet Toeing In, Hands on Top of Head—Check Correct Sitting Position.

   Cross Sitting Position, Hands on Top of Head—Check Correct Sitting Position.

   Bend trunk forward—One!
   Head twisting R.—Two!
   Return—Three!
   Position—Four!
   Same L.

8. Trunk.

   Stride Sitting on Benches, Feet Toeing In, Hands on Neck.

   Cross Sitting Position, Hands on Neck.

   Twist trunk to R. (keep elbows well back)—One!
   Trunk bending L., elbow to L. knee (keep elbows well back) —Two!
   Return—Three!
   Position—Four!

9. Balance—Feet.

   Standing Position on Tilted Balance Boards, Arms Side Horizontal.

Bend R. knee upward, turn knee out—One!
Stretch R. leg forward, turn foot towards body—Two!
Bend R. knee upward, turn knee out—Three!
Step—Four!
Same L.—Walk across Board.

10. Suspension.
    Standing Position, Facing Bars.
    Climbing upward, R. foot on first bar, L. hand shoulder high —One!
    L. foot and R. hand one bar higher—Two!
    Continue upward R.—Three!
    Continue upward L.—Four!
    Passive Hanging Back to Bars, Hands about Three Feet Apart.
    Contract abdominal muscles, flatten back, touch soles of feet together, separate knees—One!
    Raise legs, knees separated, hold the soles of the feet together—Two!
    Return—Three!
    Position—Four!
    Repeat.
    Return—4 counts.
11. Game.
    Musical Marbles, Chapter XXIX, page 459.
12. Breathing—Feet.
    Repeat Schedule I, Exercise 12.

### SCHEDULE VIII

1. Rest—Feet.
    a, b, and c as Schedule V.
    d. Sitting Facing Sideward (pupils side by side) on Benches, Feet on Floor, Two Inches Apart, Toeing Forward.
    Place R. foot forward, R. heel opposite L. toe, feet parallel —One!
    Keep R. heel stationary, grasp with toes of R. foot, pull back along floor as in gripping an imaginary towel.—Two!—Three! —Four!—Five!
    Position—Six!
    Same L.
2. Knee Alignment. (Exercises for stretching hamstrings and tendo Achillis.)
    Standing on All Fours—Hands and Feet.
    Push down on the heels and stretch the muscles at back of the leg—One!
    Relax—Two!

3. Lower Back.
   a. Backward Lying Position.
      Place the soles of the feet together—Simultaneously draw the feet toward the body and draw hands along the sides to under arm position (hold the knees outward and as near the floor as possible)—One!
      Extend the arms sideward, little finger to floor, a little above side horizontal and extend the legs (legs will now be diagonally outward and on the floor)—Two!
      Arms at sides—feet together—Three!
      Hold—Four!
      Repeat.
   b. Prone Lying Position, Hands Under Abdomen.
      Keep pelvis and shoulders down, press hands upward and hump the back—One!
      Relax—Two!
      NOTE: To stretch the psoas magnus. Humping up the back shortens the abdominals and prevents the thigh flexors from acting.
   c. Standing Position with Back to Wall, One Foot or More from Wall, Feet Toeing In.
      Bend the knees as if to sit—assume a sitting position with the entire back, shoulders and head touching the wall. Flatten the back, contract the abdominal muscles and press back to wall. Straighten knees slowly, take small steps towards wall. Come to an erect position keeping the entire back, shoulders and head in contact with the wall (5 to 10 counts). Assume sitting position on wall and repeat.

4. Abdomen.
   Backward Lying, Arms "T" Position, Soles of Feet Together.
      Raise head (keep arms on the floor)—One!
      Raise legs, knees apart, soles of feet pressed together (keep hips on floor)—Two! (Have student count aloud or exhale.)
      Return legs—Three!
      Position—Four!

5. Breathing.
   Hook Lying Position.
      Arm rotation outward, breathe in—One!
      Return and exhale—Two!

6. Upper Back—Chest.
   Cross Sitting Position.
      Arms side horizontal, pinch shoulder blades together. (Do not raise or pull back the shoulders. Limit the action to the shoulder blade adductors.)—One!
      Turn palms upward (hold shoulder blade position)—Two!

Return (hold shoulder blade position)—Three!
Position—Four!

NOTE: This exercise allows localized action of scapular adductors (Rhomboids) by throwing out of action the arm adductors accomplished by activating the arm abductors in arm raising. (See Pinch Shoulder Blades, Chapter XVIII, page 207.)

**7.** Head.

Lean Stand Position, Facing Wall. Stand Arm's Distance Away, Body Inclined Slightly Forward, Back Flat. Place Hands on Wall Shoulder High and Shoulder Width Apart, Elbows Slightly Bent.

Drop head forward—One!
Raise head, chin in, pinch shoulder blades together—Two!
Hold (hold shoulder blade position, neck back, chin in)—Three!—Four!
Repeat.

8. Trunk.

Standing Position.

Arms side horizontal, place R. foot forward (toeing forward)—One!
Twist trunk R. and turn palms upward—Two!
Return—Three!
Position—Four!
Same L.

NOTE: Trunk twisting R. with R. foot forward gives maximum torsion to the trunk. The balance is made more difficult by the foot position.

9. Balance—Feet.

Standing Position on Tilted Balance Board, Arms Side Horizontal.

Bend R. knee upward, turn knee out—One!
Stretch R. leg backward—Two!
R. knee upward, turn knee out—Three!
Step—Four!
Same L.—Walk across Board.

10. Suspension.

Standing Position, Facing Bars.

Climbing upward, R. foot on first bar, L. hand shoulder high—One!
L. foot and R. hand one bar higher—Two!
Continue upward R.—Three!
Continue upward L.—Four!
Passive Hanging, Back to Bars, Hands about Three Feet Apart.
Place the soles of feet together, draw the feet toward the body, turn the knees outward—One!

Extend the legs (diagonally outward)—Two!
Feet together—Three!
Hold—Four!
Repeat.

11. Game.
    Pussy Wants a Corner on Wall, Chapter XXIX, page 448.
12. Breathing—Feet.
    Repeat Schedule I, Exercise 12.

## CHAPTER XXVII

### Exercises for Specific Conditions

## SCHEDULE FOR HOME AND SCHOOL—INTRODUCTORY NOTES

1. Classification of Students:

   In all corrective classes there are exaggerated cases that need some individual attention. The exercises here presented are for individual instruction for the students characterized by these conditions. All students should be encouraged in their personal efforts to carry on corrective exercises at home as well as school.

2. Exercises at Home and School:

   The teacher should carefully teach and supervise the exercises so that student understands clearly the purpose and knows definitely what he is working for. When student understands the exercises he may use them both for home and school assignment. It is recommended that the teacher check the individual exercises at least once a week in order that any technical faults in performance made at home can be promptly rectified.

3. *Fundamental Positions.* (*For detailed Fundamental and Starting Positions, descriptions and illustrations,* see Chapter XVIII, page 187.)

   In all fundamental positions for all exercises, hands are at the sides, unless otherwise designated.

4. *Nomenclature.* (*For detailed Nomenclature, discussion and directions see* Chapter XVIII, page 203.)

   Presentation of Exercises.

   a. On Command.

      The students may execute the individual exercises either in response to "Command" or in "Rhythm." Exercises in response to "Command" are more generally recommended for individual use.

   b. Number of Repetitions.

      Number of repetitions to be determined by needs of individual in each case.

5. Sequence of Exercises.

   Exercises are given for specific conditions in Recumbent Positions, Sitting Positions, and Miscellaneous (Hanging, Kneeling, etc.)

   The exercises are based on the principle of the need for segmental control and emphasize correction of segments involved in the particular defect.

6. For a description of the various segmental deviations and variations see Studies in Posture and Growth Divergences, Chapters VI, VII and VIII. For general theory and fundamental principles involved see Applied Principles, Chapters XI, XII and XIII.

## Schedules of Exercises for Specific Conditions

### Round Shoulders

### SCHEDULE I

In all Prone Lying exercises, in using trunk raising for correction of Kyphosis, Round Back, either Total or Round Hollow, or Round Shoulders, great care must be taken to raise the upper trunk only, to keep the correction above the mid-dorsal region. The tendency is to increase the compensatory lumbar curve, on account of the increased mobility of the lumbar area.

In all arm and head raising, in Prone Lying exercises, emphasize ''chin in and back.'' Raise the head only two to three inches from the floor. The effort to localize the movement to the upper back will obtain lower trunk fixation by calling the abdominals into action and will neutralize hyperextension of the body on the pelvis.

1. Hook Lying Position.
   Turn arms outward—with spinal push up—push head up, chin in, stretch spine—One! (See Spinal Push Up, Chapter XVIII, page 207.)
   Return—Two!
2. Prone Lying Position, Pillow Under Abdomen, Hands Clasped in Rear.
   Pinch shoulder blades together (keep head on floor, upper back flat, arms relaxed—do not raise or pull back the shoulders—limit the action to the shoulder blade adductors)—One!
   Hold—Two!—Three!
   Position—Four!
   Note: Keeping the head on the floor and the hands interlocked, with arms relaxed, makes it possible to localize the action to shoulder blade adductors. The arms remain relaxed throughout the exercise. Also do not pull back or raise the shoulders. (See Pinch the Shoulder Blades, Chapter XVIII, page 207.)
3. Prone Lying Position—Pillow under abdomen.
   Arms side horizontal (head remains on the floor)—One!
   Turn palms upward (head remains on the floor)—Two!
   Return—Three.
   Position—Four!

4. Prone Lying Position—Pillow Under Abdomen.

   Arms side horizontal, pinch shoulder blades together (upper back flat—do not raise or pull back the shoulders—limit the action to the shoulder blade adductors)—One!
   Turn palms upward (hold the shoulder blade position)—Two!
   Return (hold shoulder blade position)—Three!
   Position—Four!

   NOTE: This exercise secures localized action of the shoulder blade adductors. (See Pinch the Shoulder Blades Together, Chapter XVIII, page 207.)

5. Progression indicated:

   Shoulder Blade Pinch may be taken with head raising (raise head, chin in, face 3 inches from floor).

SCHEDULE II

1. Stride Sitting on Bench, Feet Toeing Forward or Cross Sitting Position on Floor.

   a. Arms side horizontal, push head up, chin in, contract abdominal muscles, flatten back—One! (See Spinal Push Up, Chapter XVIII, page 207.)
   Turn palms upward (hold head position)—Two!
   Return—Three!
   Position—Four!

   b. Arms side horizontal, pinch shoulder blades together (do not raise or pull back the shoulders—limit the action to the shoulder blade adductors)—One!
   Turn palms upward (hold shoulder blade position)—Two!
   Return (hold shoulder blade position)—Three!
   Position—Four!

   c. Clasp hands in rear, pinch shoulder blades together (keep arms relaxed)—One!
   Bend trunk forward (hold shoulder blade pinch)—Two!
   Return—Three!
   Position—Four!

   Progression indicated:

   Exercise may be taken holding shoulder blade pinch in trunk bending sideward, in trunk rotation, and in trunk twisting.

   d. Arms side horizontal, pinch shoulder blades together, bend trunk forward—One!
   Turn palms upward (hold shoulder blade pinch)—Two!
   Return (hold shoulder blade pinch)—Three!
   Position—Four!

## KYPHOSIS (ROUND BACK)

### SCHEDULE I

See Introductory Paragraph for Round Shoulders, Schedule I, p. 382.

1. Prone Lying Position, Hands on Hips.
   Raise trunk, chin in, face 3 inches from the floor, keep head in line with trunk—One!
   Return—Two!
2. Prone Lying Position, Arms Reverse "T" Position.
   Raise trunk and arms, chin in, face 3 inches from the floor—One!
   Turn palms out and upward—Two!
   Return—Three!
   Position—Four!
3. Prone Lying Position, Hands on Hips.
   Pinch shoulder blades together (keep hands on the floor, let the shoulder blades lift the elbows from the floor—do not force the elbow back, keep the shoulders higher than the elbows throughout)—One!
   Raise the trunk, chin in, face 3 inches from the floor, and hold the shoulder blade pinch—Two!
   Return—Three!
   Position—Four!
4. Prone Lying Position, Arms Side Horizontal.
   Pinch shoulder blades together and raise trunk and arms, chin in, face 3 inches from the floor—One!
   Turn palms upward (hold shoulder blade position)—Two!
   Return palms (hold shoulder blade position)—Three!
   Position—Four!
   Progression indicated in this series:
   Raise trunk, hands on neck.
   Raise trunk, arms vertical.
   Raise trunk, hands on chest, over head, in rear of shoulders, etc.
   Raise trunk, arms from vertical to "arms bend," with resistance.

### SCHEDULE II

1. Stride Sitting on Bench, Feet Toeing Forward.
   Cross Sitting Position on Floor.
   Arms side horizontal, pinch shoulder blades together, push head up, chin in, stretch spine, contract abdominal muscles—One!
   Turn palms upward (hold shoulder blade position)—Two!

Return (hold shoulder blade position)—Three!
Position—Four!

2 Stride Sitting on Bench, Feet Toeing Forward, Arms Side Horizontal.

Cross Sitting on Floor, Arms Side Horizontal.

Pinch shoulder blades together, bend trunk forward—One!
Turn palms upward (hold shoulder blade position)—Two!
Return (hold shoulder blade position)—Three!
Position—Four!

Progression indicated:

Trunk forward bend position, small arm circles backward.
Trunk forward bend position, trunk forward twisting.
Trunk twisted R. or L. bend trunk forward.

3 Stride Sitting on Bench, Feet Toeing Forward.

Instructor places hands under the shoulders of the student and raises the arms of the student, pulling up and back, resisting with body against the back of the student. (Student passive)—One—Two—Three—Four!

Note: Exercise is to passively stretch the pectorals and at the same time to forcibly flatten the rounded portion of the upper back. By standing sidewise, hip against the back and grasping the arms in Outward Rotation, more powerful correction is obtained. Arms may be grasped either in side horizontal, rotated outward, or with elbows bent, hands at shoulders, with the grasp over the bent forearm.

4. Passive Hanging, Hands Separated about Three Feet on Horizontal Bar.

Instructor places hands on the upper dorsal region of the spine and applies pressure by pushing strongly forward—One—Two—Three—Four!

Note: See Note, Exercise 3, in reference to stretching of the pectorals.

## Kypholordosis (Round Hollow Back)

### SCHEDULE I

*In Backward Lying Position in all leg raising upward, the knees are separated. Separating the knees before bending to chest activates the thigh abductors, thus preventing the adductors from aiding the psoas in tilting the pelvis forward and arching the lower back.*

*In all leg and trunk raising from a Backward Lying Position, have student exhale or count aloud, as legs or trunk are raised in order to relieve strain by reducing intra-abdominal pressure.*

1. Hook Lying Position, Arms Reverse "T."
   Separate knees, touch soles of feet together—One!
   Raise legs to chest, knees bent and separated (keep hips on the floor)—Two! (Have the student count aloud or exhale.)
   Return—Three!
   Position—Four!
2. Hook Lying Position, Hands on Neck, Soles of Feet Together.
   Raise legs to chest, knees bent and separated (keep hips on the floor)—One! (Have student count aloud or exhale.)

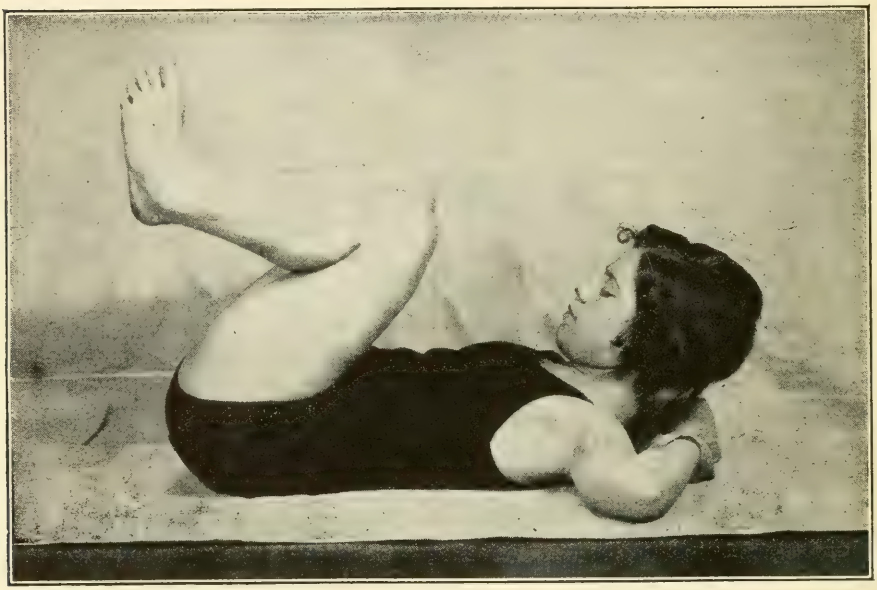

FIGURE 81

Hook Lying Position—Raise Head—Raise Legs to Chest—Knees Bent and Separated

Raise head forward (keep arms on floor)—Two!
Return head—Three!
Position—Four!

NOTE: Head raising forward activates the abdominals in flexing the spine forward, thereby flattening the lower back. In forward head raising from this position the chin must be kept down in order to correct cervical lordosis as compensation to the increased dorsal curve. To offset any exaggeration of existing head forward defect, these movements should be followed by specific exercises to flatten the cervical spine and to stretch the shortened sternocleido mastoid. (See Spinal Push Up, Chapter XVIII, page 207.) (See Head Exercises, Chapters XXIII, XXIV, XXV and XXVI.)

3. Hook Lying Position, Arms Reverse "T," Soles of Feet Together.

   Raise head forward (keep arms on floor)—One!
   Raise legs to chest, knees bent and separated (keep hips on floor)—Two! (Have student count aloud or exhale.)
   Return—Three!
   Position—Four!

   Note: See note under Exercise 2.

4. Prone Lying Position, Hands Under Abdomen.

   Keep pelvis and shoulders down, press hands upward and hump up the back—One!
   Relax—Two!

   Note: Humping up the back shortens the abdominals and prevents the thigh flexors from acting. (See Exp. Terms, Chapter XVIII, page 208.)

### SCHEDULE II

1. Stride Sitting on Bench, Feet Toeing Forward, Hands on Top of Head, or Cross Sitting Position on Floor, Hands on Top of Head.

   Push head and hands up, chin in, stretch spine (stretch upward as tall as possible), contract abdominal muscles, flatten back—One!
   Bend trunk forward and twist to R.—Two!
   Return—Three!
   Position—Four!
   Same L.

2. Stride Sitting on Bench, Feet Toeing Forward, Hands on Top of Head, or Cross Sitting Position on Floor, Hands on Top of Head.

   Push head and hands up, chin in, stretch spine (stretch upward as tall as possible), contract abdominal muscles, flatten back—One!
   Twist trunk R. and bend forward—Two!
   Return—Three!
   Position—Four!
   Same L.

3. Stride Sitting on Bench, Feet Toeing Forward, Arms Reverse "T," or Cross Sitting Position on Floor, Arms Reverse "T."

   Pinch shoulder blades together—keep arms in reverse "T" position—One!
   Bend trunk R., hold shoulder blade pinch, and hold arm position—Two!
   Return—Three!
   Position—Four!

4. Prone Half Reclining Position on High Plinth, Hips Supported, Feet on Floor, Arms Reverse "T."

Raise head and arms, chin in—One!
Pinch shoulder blades together, keep arms in reverse "T." position—Two!
Contract abdominal muscles, keep the lower back flat and raise the trunk—Three!
Arms in position at sides—Four!

## LORDOSIS (HOLLOW BACK)

### SCHEDULE I

In all leg raisings or trunk raising forward from the Backward Lying Position have student exhale (count aloud) as legs or trunk are raised to relieve intra-abdominal strain.

1. Hook Lying Position. (See Fig. 71, page 304.)
   Contract the abdominal muscles and press the back to the floor—One!
   Relax—Two! (Thomas and Goldthwait.)

2. Hook Lying Position, Arms Reverse "T," Soles of Feet Together. (See Fig. 81, page 386.)
   Raise head forward (keep arms on floor)—One!
   Raise legs to chest, knees bent and separated (keep hips on floor)—Two! (Have student count aloud or exhale.)
   Return—Three!
   Position—Four!

   NOTE: See Note, Kypholordosis, Schedule I, Exercise 2.

3. Backward Lying Position.
   Place the soles of the feet together and draw the feet toward the body, holding the knees outward and as near the floor as possible—One! (As the leg movement in the frog kick in swimming.)
   Extend leg (legs will now be diagonally outward and on the floor)—Two!
   Feet and legs together—Three!
   Hold—Four!

4. Prone Lying Position, Hands Under Abdomen.
   Keep pelvis and shoulders down, press hands upward and hump up the back—One!
   Return—Two!

   NOTE: Humping up the back shortens the abdominals and prevents the thigh flexors from acting. Exercise is to stretch the psoas magnus.

5. Kneeling On All Fours.
   Hump up the back—One!
   Return—Two!
   NOTE: Kneeling position fixes the shoulder girdle and pelvis.

### SCHEDULE II

1. Standing Position, Back to Wall, One Foot or More from the Wall, Toeing In. (See Fig. 78, page 362.)
   Bend the knees as if to sit—assume a sitting position with the entire back, shoulders and head touching the wall. Flatten the back, contract the abdominal muscles and press back to the wall, straighten knees slowly, take small steps towards wall. Come to an erect position, keeping the entire back, shoulders and head in contact with the wall (5 to 10 counts). Assume sitting position on wall and repeat.
2. Standing Position, Back Against Wall, Feet Six Inches from the Wall, Toeing in, Knees Slightly Bent.
   Relax shoulders and upper trunk forward until the lower back is in contact with wall. Contract the abdominal muscles, grip the buttocks and raise the trunk, flatten the entire back against the wall—One!
   Hold—Two!
3. Standing Position, One Foot or More from the Wall. Bend Knees as if to Sit—Assume a Sitting Position With the Entire Back, Shoulders and Head Touching the Wall. (See Fig. 78, page 362.)
   Flatten the back, contract the abdominal muscles, press the back to the wall, bend trunk R.—One!
   Return—Two!
   Same L.
4. Standing Position on Tilted Balance Boards.
   Place R. hand on lower abdomen (over symphysis), L. hand in the small of the back (Lumbar Curve), push R. hand up with the front pelvic bone (symphysis pubis), grip the buttocks together—One! (Feel the flattening of lower spine with L. hand.)
   Hold—Two!
   NOTE: Centering the attention on the active tilting of the pelvis activates more definitely the abdominals and influences the flattening of the lumbar curve. (See Pelvis, Chapter VI, page 61.)

## FLAT BACK

### SCHEDULE I

In trunk raising for flat back emphasis may be placed on raising the trunk as far as possible to produce a curve in the lumbar region.

1. Prone Lying Position, Hands on Hips.
   Raise trunk—One!
   Return—Two!

   Progression indicated in this series:
   Raise trunk, hands on neck.
   Raise trunk, hands on top of head.
   Raise trunk, arms side horizontal.
   Raise trunk, arms vertical, etc.

2. Prone Lying Position, Trunk Raised Upward, Hands on Hips.
   Twist trunk R.—One!
   Return—Two!
   Same L.

3. Hook Lying Position.
   Bend knees to chest—One!
   Extend legs upward—Two!
   Return—Three!
   Position—Four!

   NOTE: Leg raising indicated for flat back for the reason that it is contra indicated in hollow back.

4. Backward Lying Position.
   Raise legs upward, feet together—One!
   Return—Two!

   NOTE: See note, Exercise 3.

### SCHEDULE II

1. Stride Standing Position, Arms Vertical.
   Bend arms against imaginary resistance, bring elbows close to the sides—One—Two—Three—Four!

   NOTE: Stride stand given to increase lateral femuro-pelvic stability and to decrease anterior posterior stability. In consequence all shoulder, upper back and incident arm action tends to increase the extension of the lumbar spine and the sacro vertebral angle.

2. Stride Standing Position, Wand Over Head In Horizontal Position.
   Pull wand downward to rear of thigh—One!
   Return—Two!

   NOTE: To prevent shifting the total body weight forward onto the front of the feet, keep pelvis stable on the legs, by a moderate tension of the abdominals and gluteals.

3. Stride Standing Position, Wand In Rear Under the Arms, Elbows Hooked Around It. Wand Is Held Just Below the Scapulæ.

Twist trunk R.—One!
Bend trunk backward—Two!
Return—Three!
Position—Four!
Same L.

NOTE: Trunk backward bending is executed from the trunk twist position in order to more securely lock the pelvis and localize the movement to the lower spine eliminating pelvic movement on the femurs. Wand held high or in diagonal across back gives upper trunk and shoulder girdle fixation and is good for bad shoulder positions which so frequently accompany flat backs.

4. Stride Standing Position, Wand In Rear Diagonally Across the Back. R. Arm Bent, R. Hand at R. Shoulder, L. Arm Extended at Side.

Twist trunk R.—One!
Bend trunk L.—Two!
Return—Three!
Position—Four!

NOTE: See note, Exercise 3.

## SCOLIOSIS—POSTURAL

### SCOLIOSIS—L. SHOULDER HIGH

In postural cases with high L. shoulder find out the cause if possible and remove the cause. If the cause is a short leg have the shoe corrected; if the cause is carrying books always in one arm, or habitually standing on one foot try to develop correct habits to overcome the condition.

1. In the application of all exercises place the emphasis on correct body alignment with shoulders even. When possible in individual cases find the best keynote position with the back bare—the position of the arms that secures the best alignment of the shoulders. Execute all exercises in the keynote position. The keynote position with L. shoulder high may be any one of several positions of the arms with the L. arm low and the R. arm high: the L. hand may be on the hip, the R. hand on the neck; the L. arm may be at the side, the R. arm side horizontal; or the L. arm may be side horizontal, with the R. arm vertical.

2. Deviations of the Upper and Lower Back and weak Abdominal muscles are usually associated with shoulder conditions.

Head, Upper Back, Chest, Abdominal and Lower Back exercises in Schedules, Chapters XXIII, XXIV, XXV, and XXVI are recommended.

3. Passive hanging on stall bars, back to bars with the L. arm low and the R. arm high is recommended.

### SCOLIOSIS—R. SHOULDER HIGH

For postural scoliosis, R. shoulder high, apply the same with R. arm low and L. arm high in an effort to secure the best shoulder and body alignment. For this condition passive hanging, back to bars with R. arm low and L. arm high is recommended.

Note: Care should be taken to ascertain if pupil is R. handed and if so supervision should be exercised over the recreational activities that would tend to exaggerate the condition. Tennis, shot put, pole vault, etc., preferably advise such changes as would aid correction. Practice back hand stroke low down in tennis or squash. In swimming use double back scull or side position left hand over, etc.

## Feet

### FEET: WEAK ANTERIOR ARCH

1. Hook Lying Position.

   Curl toes—One!
   Relax—Two!

   Note: Not good for hammer toes.

2. Sitting on Bench, Feet Resting on a Block or Book 1 to 3 Inches Thick.

   Depress toes over the edge of the board, keeping toes straight —One!
   Relax—Two!

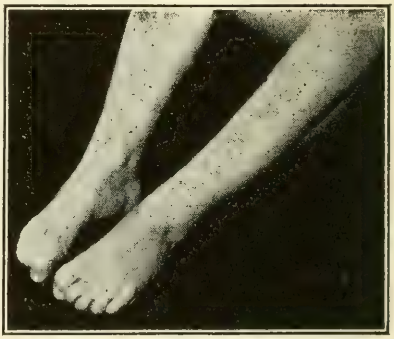

Figure 82
Feet—Hook Lying Position—Curl Toes

3. Stride Sitting Position on Bench.

   Place the R. foot forward, R. heel opposite L. toe, feet parallel. Keep R. heel stationary, grasp with toes of R. foot—pull back along floor as in gripping an imaginary towel—Two—Three—Four—Five!
   Position—Six!
   Same L.

   Note: One foot is placed in front of the other for better fixation. Hamstrings are strongly activated, hence exercise good for relaxed back knee.

4. Sitting Stride Position on Bench. (See Fig. 85, page 394.)

   R. foot, curl toes and pick up marble or pencil, keep heel stationary on floor—One!

Bring R. foot to L. knee and place marbles or pencils in L. hand —Two!
Replace R. foot—Three!
Same L.

NOTE: Placing marbles or pencils in the hand on the opposite side gives added stretch to the peroneals through adduction effort.

## FIRST AND SECOND DEGREE FLAT FOOT WITH SHORT HEEL CORD

### SCHEDULE I

1. Hook Lying Position.
Curl toes—One!
Turn balls of feet toward each other until toes touch, heels stationary—Two!
Bend ankles upward—Three!
Relax—Four!

NOTE: Flexing the toes relaxes the toe extensors, thereby throwing them out of action in association with the anterior tibial, thus obtaining localized action of the latter.
"Curl toes" not good for "hammer toes."

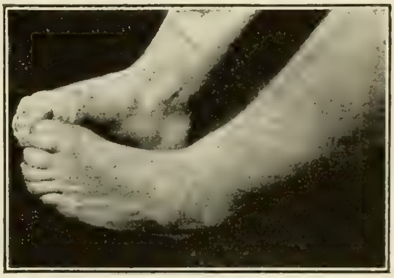

FIGURE 83

Feet—Curl Toes—Touch Balls of Feet—Bend Ankles Upward

2. Backward Lying Position.
Grip the buttocks together, rotate thighs outward—One!
Relax—Two!

3. Long Sitting Position. (See Fig. 84, page 394.)
R. leg crossed over L., R. foot circling, keeping toes curled.
Start out and down—One!
Inward (strongly)—Two!
Upward (strongly)—Three!
Relax—Four!

NOTE: Strengthening the tibials and not the Gastrocnemius and Peroneals.

4. Hook Sitting Position, Feet Toeing In. (See Fig. 82, page 392.)
Arch feet as cat arches back, keeping heels stationary on floor—One!
Relax—Two!

NOTE: Not good for claw feet, contracted feet, or hammer toes.

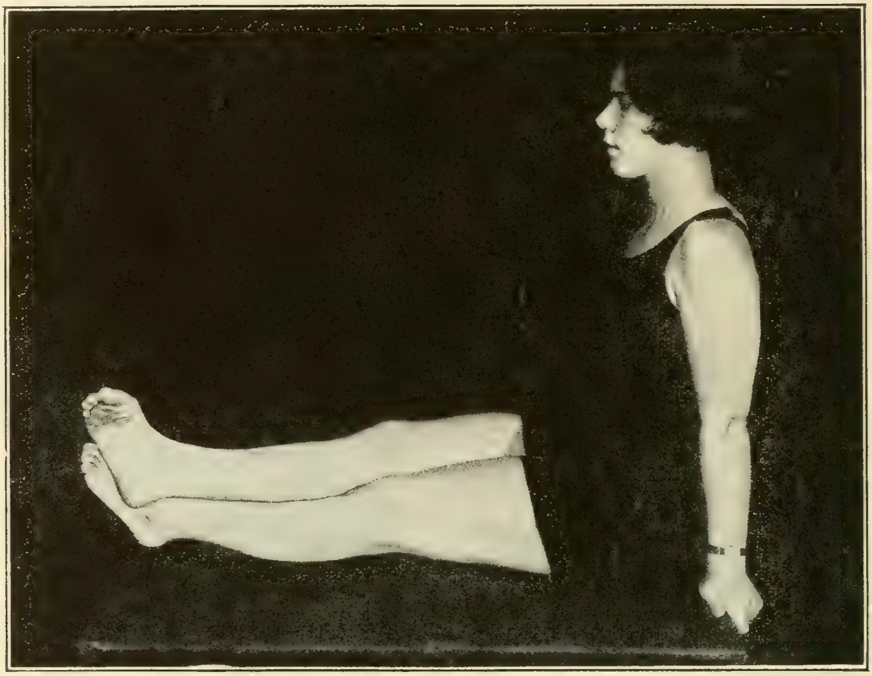

FIGURE 84

Feet—Long Sitting Position—R. Leg Crossed Over L.—R. Foot Circling Out—Down, In and Up Strongly

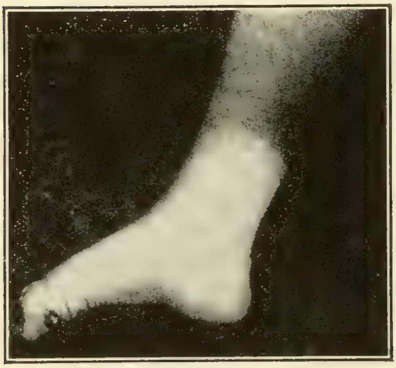

FIGURE 85

Feet—R. Foot Curl Toes and Pick Up Marble, Keep Heel Stationary on Floor

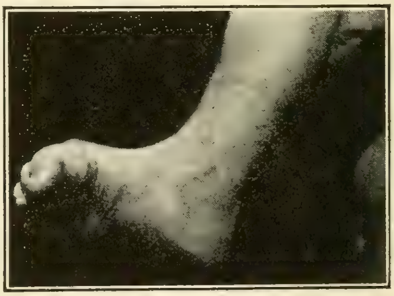

FIGURE 86

Feet—Bring R. Foot to Left Knee and Place Marble in L. Hand

5. Sitting Stride on Bench, Feet Toeing Forward.

R. foot, curl toes and pick up marble, keep heel stationary on floor—One!
Bring R. foot to L. knee and place marbles in L. hand—Two!
Replace R. foot—Three!
Same L.

Note: Placing marbles in the hand on the opposite side gives added stretch to the peroneals.

## First and Second Degree Flat Foot With Short Heel Cord

### SCHEDULE II

1. Sitting Position on Bench, Feet Together, Hands in Lap.

Cross feet, outer border of feet in contact with floor—One!
Stand, keeping feet crossed and weight on outer border of feet—Two!
Resume sitting position, keeping feet crossed—Three!
Position—Four!

Note: Hands are placed in the lap to keep them from assisting in assuming the standing position. This makes it necessary for all of the muscle work to be performed by the leg (feet in corrective position) and trunk muscles.

2. Sitting Position on Bench, Feet Together.

Extend legs, place both feet forward—One!
Cross R. foot over L., curl toes and bend ankle upward—Two!
Return—Three!
Position—Four!

3. Standing Position. (See Fig. 63, page 249.)

Thigh rotation outward, turn knees out, grip buttocks together, twisting thighs outward. Keep big toe joints on the floor—One!
Return—Two!

Note: Centering the attention on the buttocks emphasizes the thigh element.

4. Standing Position.

a. Pigeon-toe walking, keeping heels on the floor.
b. Correct walking, toeing forward. Work for correct foot position:
    Heel (place weight on the forward foot on count "one")—One!
    Outer border of the foot—Two!
    Toes—Three!

## THIRD DEGREE FLAT FOOT—FLEXIBLE—WITH SHORT HEEL CORD *

### SCHEDULE I

Unless steady progress can be shown toward continuous correction of skeletal faults, these cases should have orthopædic attention because of the high percentage that have faulty physiological background or actual congenital flat foot. A conscientious tryout of three to six months should be ample to prove the question. *Improved position only held temporarily by increase of muscle power is not sufficient to justify failure to refer the case for orthopædic attention.*

1. Hook Lying Position. (See Fig. 82, page 392.)
    Curl toes—One!
    Relax—Two!
    NOTE: "Curl toes" not good for "hammer toes."
2. Hook Lying Position.
    Curl toes—One!
    Turn balls of feet toward each other until toes touch, heels stationary—Two!
    Relax—Three!
3. Hook Lying Position, R. Foot Resting on L. Knee (or L. Resting on R. Knee). (See Fig. 79, page 368.)
    Curl toes R. foot and invert—One!
    Relax—Two!
    Same L.
    NOTE: In order to adduct and invert to obtain this position posterior tibial must be strongly activated.
4. Backward Lying Position.
    Grip the buttocks together, rotate the thighs outward—One!
    Relax—Two!

### SCHEDULE II

1. Hook Sitting Position.
    Curl toes—One!
    Turn balls of feet toward each other until toes touch (keep heels stationary)—Two!
    Relax—Three!
    NOTE: "Curl toes" not good for "hammer toes."

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* *For third degree Rigid Flat Foot no exercises are recommended. Cases should be referred to orthopædic surgeons.* (See Fig. 87, page 397.)

2. Long Sitting Position.
    Cross R. foot over L.—One!
    Push down on R. heel and raise leg slightly—Two!
    Return—Three!
    Position—Four!
    Same L.
3. Cross Sitting Position, R. Leg Crossed Over L. (or L. Crossed Over R.).
    Curl toes R.—One! (See Fig. 80, page 371.)
    Draw toes R. towards L. knee—Two!
    Relax—Three!
    Same L.
4. Sitting on Bench, Feet Resting on a Block or Book, One to Three Inches Thick.
    Depress toes over the edge of the board (keep toes straight)—One!
    Relax—Two!

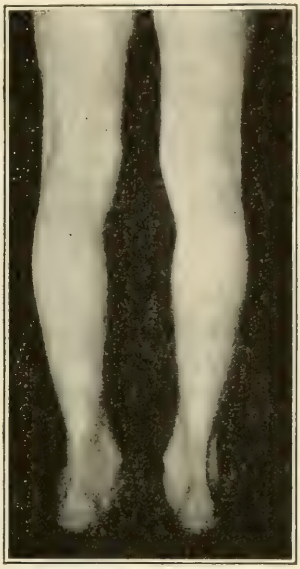

FIGURE 87

Rigid Flat Foot — Talipes Valgus with Pes Planus—Valgus Ankles — Note Peroneal Spasm and Tendo Achillis—No Exercise Indicated

### EXERCISES TO STRETCH THE TENDO ACHILLIS

#### SCHEDULE I

In all exercises "Pushing down on the heels." "Foot inverted, curl toes" is given to tighten the plantar structures to prevent the anterior tibial from flattening the arch and supinating the forefoot. Practically all cases of flat feet have some degree of tightening in heel cords which may be from over action or partial contracture. All active and passive efforts at stretching the achillis by means of force applied to the forefoot may produce further harm. Therefore the forefoot should be kept adducted as much as possible and in case the anterior tibial is very strong and tends to supinate the forefoot active ankle action upward (dorsiflexion) to stretch the achillis should be ruled out or minimized. Passive or semi-passive movements as in Schedule II are indicated.

1. Backward Lying Position.
    Push down on R. heel (hold foot in inverted position with toes curled)—One!
    Relax—Two!
    Same L.
2. Backward Lying Position, Knees Separated and Bent to Chest.
    Straighten both legs upward, steady thighs with hands, curl toes and bend ankles toward body—One!
    Hold stretch—Two! Three! (See Fig. 88, page 398.)
    Position—Four!

3. Long Sitting Position.
   Curl toes, push down on heels, hold toes in curl position, bend ankles toward body—One!
   Relax—Two!

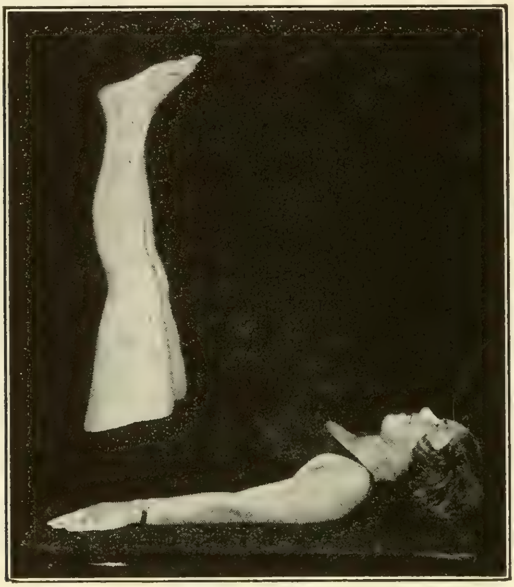

FIGURE 88

Backward Lying Position, Hands at Sides—Straighten Both Legs Upward—To Stretch Tendo Achillis

4. Long Sitting Position.
   Cross R. foot over L.—One!
   Push down on R. heel, turn front of foot in and raise leg—Two!
   Return—Three!
   Position—Four!
   Same L.

### SCHEDULE II

Passive Movements to Stretch Tendo Achillis—see Note, Schedule I, Exercise 1.

1. Stride Sitting on Bench, Feet Toeing In, Hands on Knees, Trunk One-half Forward Bend.
   Slide the feet back as far as possible, toe in, and keep the heels firmly on the floor—One! Two! Three! Four!
   Resume the starting position and repeat.

2. Stride Sitting on Bench, Feet Toeing In, Hands on Knees, Trunk One-half Forward Bend.
   Slide the feet back in line with hips—One!
   Push down on knees and raise body weight from bench—Two!
   Hold—Three!
   Return—Four!

3. Stride Standing Position, Toeing In, Hands on Hips.
   Bend trunk forward, touch hands to the floor—One!
   Return—Two!

4. Standing Position, Hands on Hips.
   Place R. foot forward, toeing in, weight on outer border—One!
   Bend R. knee, incline the body forward over the bent knee (R. charge position, body in line with rear leg, both feet toeing in)—Two!
   Hold the charge position, keep L. heel on the floor to stretch the L. heel cord—Three! Four! Five!
   Position—Six!
   Same L.

5. Lean Stand Facing Wall. Stand Arm's Distance Away, Body Inclined Slightly Forward, Back Flat. Hands on the Wall, Shoulder High and Shoulder Width Apart, Elbows Slightly Bent.
   Bend arms until chest nearly touches the wall (keep body in straight line, keep heels on the floor)—One!
   Return—Two!

6. Hang Stand on the Stall Bars, Toe In on the First Bar, Facing the Bars, Arms as High as Student Can Reach.
   Let the body sag. Stretch the tendo achillis by pulling up with the arms. Return to position until heels are in line with toes—One! Two! Three! Four!

7. Standing Position on Tilted Balance Boards, Hands on Hips.
   Touch R. heel forward, bend L. knee (keep L. heel on the board)—One!
   Return—Two!
   Same L.

8. Standing Position on Tilted Balance Boards.
   Raise R. foot, grasp front foot with L. hand, bend L. knee (keep heel on board)—One! Two! Three! Four! Five! Six! Seven!
   Position—Eight!
   Same L.

## HYPEREXTENSION OF KNEE

Correction of hyperextension or back knee is obtained by correcting other segmental deviations which through compensatory static action have produced it. It is a compensatory fault resulting from forward position of the pelvis, with shoulder girdle back and head forward.

1. Hook Sitting Position.
   Raise forefoot R. and rotate in—One!
   Lift foot from the floor—Two!
   Position—Three!
   Same L.

   Note: To activate internal rotator of the knee (popliteus).

2. Hook Sitting Position.
   Curl toes R.—One!
   Raise forefoot and rotate in—Two!
   Place on floor, letting the entire border come in contact with the floor—Three!
   Lift foot and return—Four!
   Same L.

3. Stride Sitting Position on Bench.
   Place the R. foot forward, R. heel opposite L. toe, feet parallel—One!
   Keep R. heel stationary, grasp with toes of R. foot, pull back along floor as in gripping an imaginary towel—Two! Three! Four! Five!
   Position—Six!
   Same L.

   Note: One foot is placed in front of the other for better fixation. Hamstrings are strongly activated.

### Claw Feet (Contracted Feet)

1. Sitting Position on Bench.
   Extend the toes as straight as possible, make the entire foot longer—One!
   Relax—Two!

2. Sitting Position on Bench, Feet Resting on Block or Book with the Metatarsal Heads Resting on the Edge of the Block.
   Press down on ball of foot, extend the toes at the metatarso-phalangeal joint—One!
   Relax—Two!

   Note: This effects correction of the transverse arch without increasing the hammer toes. Be careful to extend the toes without hyperextending the metatarso-phalangeal joints. Pressure on forefoot stretches tight plantar structures and assists in preventing cocking up of the toes. Have each student manipulate and massage toes and feet.

### Knockknees and Pronated Ankles

1. Cross Sitting Position, R. Leg Crossed Over L. (or L. Crossed Over R.).
   Curl toes R.—One!
   Draw toes of R. foot towards L. knee—Two! (See Fig. 80, p. 371.)
   Relax—Three!
   Same L.
2. Standing Position on Tilted Balance Board.
   Rotate the thighs outward (turn the knees out, grip the buttocks together, twisting thighs outward, keep big toe joint on the board)—One!
   Return—Two!
3. Standing Position on Tilted Balance Board.
   Place R. hand on lower abdomen, L. hand on buttocks, push R. hand up with the front pelvic bone (symphysis pubis), grip the buttocks together—One!
   Hold—Two!
4. Standing Position on Tilted Balance Board.
   Fling R. leg sideward, crossing L. leg (curl toes, bend ankle towards body)—One!
   Return—Two!
   Same L.
5. Standing Position.
   Walking, cross feet—feet strongly inverted, step one foot across the other, weight on the outer border.

### Exercises for Menstrual Period

A general note of caution is advisable in reference to exercises given during the menstrual period, because of the increased laxity of all the pelvic ligaments. Unilateral leg raising and movements giving much torsion of the pelvis might easily strain a loose sacroiliac joint. Any trunk or abdominal movements in ''Prone Lying Position'' with abdomen well supported on a pillow, or ''Hook Lying Position'' with back flat, coupled with breathing or the Mosher exercises are beneficial. We feel that the general use of the ''Knee Chest Position'' is not satisfactory except in specific instances under a physician's orders. The ''Knee Chest Position'' is seldom properly executed when generally used.

The position recommended by Dr. Goldthwait described below, we prefer for passive correction of displaced pelvic organs because it also relieves the probability of increased hollow back and gives the shoulder girdle a corrective position. The use of this position is beneficial in relieving congestion incident to the period and made worse by displacement and increased weight.

### Remedial Positions and Exercises

1. Goldthwait's Position: Prone Lying Position, pelvis completely supported on the edge of a couch. Trunk inclined downward to a level six to eight inches lower than the couch; shoulder girdle and head supported on folded forearms on a cushion. The lower back must not sag.

   Note: To insure and to increase its effectiveness in correcting displacement, air must be allowed to enter the vaginal canal.
2. Backward Lying Position, Knees to Chest, Clasp the Knees with the Hands.
3. Hook Lying Position.
4. Hook Lying Position.
   Separate knees (leg abduction)—One!
   Return—Two!
5. Hook Lying Position, Hands on Neck.
   Inhale (forcible inspiration, emphasizing proper use of the diaphragm)—One!
   Exhale (forcible expiration)—Two!

   Note: In forcible inspiration and expiration the use of the involuntary and voluntary muscles produces drainage of the large veins by pumping action of the diaphragm, thus relieving congestion.
6. Kneeling Position, Knees Together, Ankles Extended, Feet Inverted, Hands at Sides, Sit Back on the Heels.
   Trunk inclined forward, rest head and arms on the floor, arms reverse "T"—Count 10.
   Return.

   Note: Stout type individual should not hold position too long to guard against pinching the knee joint fringes.
7. Backward Lying Position, Arms Diagonal.
   Stretch legs downward—One!
   Return—Two!

### Constipation

#### SCHEDULE I

1. Prone Lying Position, Arms Under Abdomen.
   Roll entire body to R. onto the forearm—One!
   Return—Two!
   Same L.

2. Prone Lying Position, Hands Under Abdomen.
   Separate legs (leg abduction)—One!
   Return—Two!

3. Hook Lying Position (see Fig. 70, page 301).
   Separate knees and raise legs to chest, keeping back flat—One!
   (Have student count aloud or exhale.)
   Pull knees to chest with the hands, grasp the thighs under the knees and press the knees to the chest—Two—Three—Four!
   Assume starting position and repeat.

4. Backward Lying Position, Soles of Feet Together.
   Leg circling, raise legs, knees bent and separated, to chest—One!
   (Have student count aloud or exhale.)
   Circling to R.—Two!
   Down, feet do not touch the floor, and to the L.—Three!
   To chest—Four!

5. Kneeling on One Knee, Hands on Hips.
   Kneeling on the R. knee, twist trunk L. and bend trunk forward over the L. thigh—One!
   Return—Two!
   Repeat three times. Change to the L. knee and same L.

6. Kneeling on All Fours, Arms Forward as Far as Possible.
   Extend the L. leg backward and stretch (lower the hips), so that the abdomen is pressed hard against the R. thigh—One—Two—Three!
   Return—Four! Same L.

Progression: Sitting, hands on abdomen, trunk twisting and bending.

## EXERCISES FOR HEART CONDITIONS

As the incidence and development of heart trouble is one of the commonest causes of serious disease and disability, it is essential that teachers and directors acquaint themselves with some of the most important details regarding it.

There are extant many traditionally faulty and shopworn ideas about handling such cases and about the care they should receive, the work they should do, or the exercise they should take. As to the latter, the old teaching that heart cases must not take exercise, is now being supplanted by the more intelligent use of restricted exercises and recreations.

Study and proper handling have resulted in changing the whole outlook of life for thousands of children who are afflicted, and in preventing the development of a sense of failure and inferiority which formerly was so prevalent.

We have touched but slightly on the special exercises for these cases because only the cases of so-called "functional disturbances" are usually admitted to group work, and they generally are able to do the work in the "restricted" group. The special exercise prescriptions given here are taken from the work of Dr. Sven Lokrantz, as worked out in the Corrective Centers of the Los Angeles City Schools. These examples are sufficient as a basis for further individual work which we are not attempting to cover. We would refer our readers to the chapter on "Heart" in Professor George Stafford's new work, "Preventive and Corrective Physical Education," in which will be found a fine general discussion of the matter from a physical education standpoint.

It is chiefly essential to remember that all such cases should be passed on by a qualified medical man and exercises given under his supervision.

## Group Schedules for Heart Conditions[1]

Published by the courtesy of Sven Lokrantz, M. D., Director of Health and Corrective Physical Education, Los Angeles City Schools.

### 1A. PATIENT LYING DOWN

1. Arm flexion and extension with imagined resistance. (3 times.)
2. Finger flexion and extension with imagined resistance. (3 times.)
3. Leg flexion and extension with imagined resistance, keeping the feet on the plinth. (2 times.)
4. Arm carrying to side with imagined resistance. (7 times.)
5. Knee separation and closing, imagined resistance. (7 times.)
6. Leg raising, imagined resistance. (1 time.)
7. Lying on the right side, lift leg against imagined resistance. (3 times.)
8. Breathing.
9. Rest.

### 2A. PATIENT LYING DOWN

1. Sit lying (semi-recumbent, half lying with back supported) arm flexion and extension with imagined resistance. (3 times.)
2. Hips firm, sit lying (semi-recumbent, half lying with back supported), knee separation and closing, imagined resistance.
3. Sit lying (semi-recumbent, half lying with back supported), knees flexed, plane arm carrying (arms from front horizontal to side horizontal). (4 times.)
4. Kneeling, double arm rolling. (4 times.)

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[1] See "Notes in Corrective Physical Education," Sven Lokrantz, M.D.

5. Sit lying (semi-recumbent, half lying with back supported), foot flexion and extension, imagined resistance. (7 times.)
6. Half lying, deep breathing, light tapotement of chest. (Done by student.)
7. Sit lying (semi-recumbent, half lying with back supported), forearm flexion and extension, imagined resistance. (3 times.)
8. Sitting, knee flexion and extension. (2 times.)
9. Lying, arm flexion and extension. (3 times.)

## OVERWEIGHT

On a general basis obesity cases should be handled with great caution.

Exercises alone are not to be wholly relied upon because the problem is usually a physiological one. A very large percentage of the cases have some glandular dysfunction and should be referred to, or handled jointly with, a physician or endocrinologist. As a general rule there is slow oxidation, and, as these cases are apt to be sluggish, mentally as well as physically, they can stand considerable prodding. Their work may be heavy, provided they are not allowed to become too fatigued and their heart action remains normal. Hard work in recumbency is especially indicated because of the ''margin of safety'' for protection of the heart. At the same time the weight is removed from the overworked ligaments of legs and feet.

The maximum of thoracic ventilation in Backward Lying also aids in increasing oxidation.

It should also be understood that exercises alone without proper attention to diet regulation are not of much avail.

### SCHEDULE I

1. Backward Lying Position, Soles of Feet Together.
   Leg circling. Raise legs, knees bent and separated, to chest—One!
   Circling to R.—Two!
   Down, feet do not touch the floor, and to the L.—Three!
   To chest—Four!
   Same L.
2. Side Lying Position, Supporting Knee Bent.
   a. Side lying R., R. knee bent, raise L. leg upward (leg abduction) —One!
      Hold—Two!
      Return—Three!
      Position—Four!
      Repeat.
      Same L.

Note: Position gives passive pressure on supporting thigh and pelvis.

b. Side Lying R., R. knee bent, L. leg circumduction—One! Two! Three! Four!
Note: See note, Exercise "a."
Same L.

c. Side Lying R., R. knee bent, raise L. leg upward and raise trunk upward—One!
Return—Two!
Same L.
Note: See note, Exercise "a."

### SCHEDULE II

1. Hook Lying Position.
Raise legs up and down, with small, quick movements, striking heels to buttocks alternately and forcibly.

2. Hook Lying Position.
Bicycle Exercise.
Bend R. knee to chest (thigh resting on abdomen)—One!
Extend R. knee forcibly, pushing foot up, at the end of the push bend ankle towards body; as R. leg extends, allow L. knee to bend —Two!
Continue alternately and rhythmically, starting slowly, make strongest effort on upward thrust of heel, opposite leg relaxed in the downward movement. 16 counts.

3. Prone Lying Position, Pillow Under Abdomen.
Separate legs (leg abduction), bend trunk R., touch R. knee with R. hand—One!
Return—Two!
Same L.

| | |
|---|---|
| 4. Cross Sitting Position, Hands on Abdomen | Trunk rotation, press hands to abdomen—One! Two! Three! Four! |
| Sitting Stride on Bench “ “ “ | |
| Kneeling on One Knee “ “ “ | |
| Stride Standing Position “ “ “ | |

# CHAPTER XXVIII

## Corrective Exercises for Groups with Special Application

I. Foot Exercises for Group Work—College, High School, Junior High School and Elementary School.

A. Introductory Notes—Foot Exercises Group Work.

Foot exercises designed to meet the needs for a large group for foot correction when it is not possible to have mats or benches for Sitting or Lying Exercises. All exercises are taken in a Standing Position.

B. Schedule of Exercises for Large Groups.

1. Thigh rotation outward, turn knees out, grip buttocks together, twisting thighs outward (keep big toe joints on the floor)—One!
   Return—Two! (See Fig. 63, page 249.)

   Note: Centering the attention on the buttocks emphasizes the thigh element.
2. With feet close, bend knees, keep heels on the floor, keep back straight (emphasize weight on outer border of feet, turn knees outward)—One!
   Return—Two!
3. Correct walking, toeing forward, work for correct foot position:
   Heel (place weight on the forward foot on count *one*)—One!
   Outer border of foot—Two!
   Toes—Three!
4. R. foot, curl toes and pick up marble or pencil (keep heel stationary on floor—One! (See Fig. 85, page 394.)
   Bring R. foot to L. knee and place marbles or pencils in L. hand (keep back straight)—Two!
   Replace R. foot—Three!
   Same L.

   Note: Placing marbles or pencils in the hand on the opposite side gives added stretch to the peroneals through adduction effort.
5. Curl toes and touch R. heel forward—One!
   Push down on R. heel and turn front of foot towards the body—Two!
   Hold—Three!
   Position—Four!

6. Pigeon toe walking keeping heels on the floor.
7. Place the R. foot forward, R. heel opposite L. toe, feet parallel—One!
   Keep R. heel stationary, grasp with toes of R. foot, pull back along floor as in gripping an imaginary towel—Two—Three—Four—Five!
   Position—Six!

   NOTE: One foot is placed in front of the other to prevent the back knee position which would result if feet were kept together.
8. Curl toes R. foot, place R. foot across L. at right angle to L. heel (R. heel in contact with outer border to L. foot at the little toe region)—One!
   Hold. (The entire outer border of R. foot is in contact with floor, toes curled, ball of foot is turned to the rear.)—Two!
   Three!
   Position—Four!

   NOTE: R. foot forces the twisting of L. leg outward and places weight on the outer border of the L. foot.

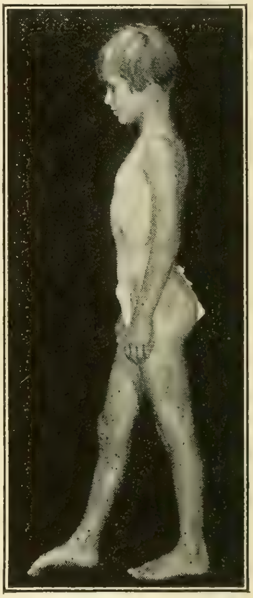

FIGURE 89

Feet—R. Heel Forward, Curl Toes. Note Correct Position of Weight-bearing Foot

9. Hold hand of person opposite for support.
   Raise R. leg, place R. heel on L. knee, thus holding L. knee in outward rotation. Be careful to have foot of stationary leg pointing straight forward with the weight on the outer border. In this position rotate R. foot out, down, in, and up (emphasis on in and up)—One—Two—Three—Four!
   Repeat (several times).
   Same L.
10. Place R. foot forward, toeing in, weight on outer border—One!
    Bend R. knee, incline the body forward over the bent knee (R. charge position, body in line with rear leg, both feet toeing in)—Two!
    Hold the charge position, keep L. heel on the floor to stretch the L. heel cord—Three—Four—Five!
    Position—Six!
    Same L.

11. Grasp seat for support or hold hand of pupil opposite for support. Curl toes—One!
    Raise R. leg, cross in front of L. knee height and as far to L. as possible—Two!
    Return—Three!
    Position—Four!
    Same L.

    NOTE: Kicking across the opposite leg in this position places weight on the outer border of the supporting foot.
12. Lean Stand Facing Wall. Stand Arm's Distance Away, Body Incline Slightly Forward, Back Flat. Hands on the Wall Shoulder High and Shoulder Width Apart, Elbows Slightly Bent.
    Bend arms until chest nearly touches the wall (keep body in straight line, keep heels on the floor)—One!
    Return—Two!

II. Foot Exercises—Exercises for General Posture for Kindergarten and First Grade.

A. Introductory Notes.

Corrective Exercises for feet and for general posture stated in terms applicable to small children. To make corrective exercises appeal to and function for very small children the exercises must be characterized by:

1. Dramatic and play element.
2. Description and explanation in simple terms.
3. Corrective and play values must be interwoven.

B. Foot Exercises.

1. Hook Sitting Position. (See Fig. 77, page 361.)
   Curl toes (keep big toes and outer border of feet on floor), make a cave on the inner border of the foot ,with the arches—One!
   Relax—Two!
2. Hook Sitting Position.
   Curl toes (keep big toes and outer border of feet on floor), make a cave on the inner border of the feet with the arches—One!
   Touch the big toes together (keep heels still, keep outer border of feet on the floor), make a bigger cave (using both arches)—Two!
   Relax—Three!
3. Hook Lying Position. (See Fig. 83, page 393.)
   Curl toes (make a cave with the inner border of the feet) —One!
   Touch the big toes together (keep heels still and firm) make a bigger cave—Two!

Bend ankles upward (keep heels on floor, open the door, keep big toes touching and keep the cave but let the little dog out)—Three!

(Dramatic element: Make your cave large enough for your little dog or kitten and then open the door to let out the little dog.)

Relax (close the door)—Four!

4. Hook Lying Position. (See Fig. 79, page 368.)
   Curl toes R. foot (make a cave)—One!
   Place R. foot upon your knee (keep toes curled)—Two! (Take your R. foot for a walk way up to your knee.)
   Replace R. foot (see if cave is still there)—Three! (Take your R. foot home again by replacing on floor.)
   Same L.
5. Standing Position.
   Place R. heel forward, curl toes—One! (Don't let R. heel go too far away, for L. foot wishes it to come home soon again!)
   Return foot to position—Two! (L. foot called R. foot home quickly!)
   Same L.
6. Standing Position or Sitting Position on Bench. (See Fig. 85, page 394.)
   R. foot, curl toes and pick up marble (keep heel firm on floor)—One!
   Bring R. foot to L. knee and place marble in L. hand—Two!
   Replace R. foot—Three!
   Position—Four!
7. Peas Porridge Hot, with feet—See page 415.
8. Tap Tap Partner, with Feet—See page 416.
9. Foot Rotation to Yankee Doodle—See page 416.
10. For additional work see Foot Exercises to Limericks and Rhythms. See page 414.

C. Corrective Exercises for General Posture.

1. Head—Upper Back.
   Cross Sitting Position.

Spinal Push Up with hands upon the head and return arms sideward downward. Place the hands upon the head. The hands are little birds in a big, big nest. The elbows should be well back and away out to the sides, making a large nest. The little birds wish to fly away but for a while we do not let them go. We push them up as far as we can. (Push the head and hands up, stretch up tall.) Push up still farther, make the nest still bigger (elbows well back). Finally let the little birds fly up and down again; arms upward and sideward downward.

2. Abdomen—Lower Back.
   Hook Lying Position.
   Clap the feet together as you clap your hands together—One!
   Raise the legs to chest (hold the clap, *i.e.*, hold the feet together, take the legs "on a visit" to the chest, keep hips at home on floor)—Two! (Have pupils count aloud.)
   Replace the legs and feet—Three! (Legs and feet home to Starting Position.)
3. Abdomen—Lower Back.
   Hook Lying Position.
   Riding a bicycle—Starting with R., bend R. knee to chest (keep hips on floor)—One! (Have pupils count aloud.)
   Extend R. leg and bend L. knee to chest (keep hips on floor)—Two! (Have pupils count aloud.)
   Continue in rhythm, imitating bicycle riding.
4. Trunk.
   Cross Sitting Position, Hands on Hips.
   Bend trunk sideward R. (let the wind blow the bush sideward)—One!
   Bend to L. (let the wind blow the bush over to the L.)—Two!
   Continue in rhythm.
5. Exercises in Schedules for Elementary Schools, Corrective, Chapter XXVI, may be adapted and used for younger children.

III. Corrective Exercises and Games Recommended for Special Classes.

1. Adjustment Classes made up of Retarded Pupils.

A. Introductory Notes:

The majority of boys and girls in the adjustment classes are retarded because of poor physical conditions. Corrective exercises are recommended for these groups to improve the general physical condition and to improve postural defects. Exercises, Games and Dancing are recommended for these classes. Reference for exercises—Types of Games with a few examples of each type are suggested.

B. Exercises.

See Schedules of Exercises, Corrective Physical Education, Elementary, Chapter XXVI.
See Exercises for Specific Conditions, Chapter XXVII.

See Exercises with Special Application, Chapter XXVIII.

C. Games.
  1. Hunting Games—Games emphasizing Big Muscle Activity with a minimum of mental effort and organization.
    a. Black and White—Supplement to Manual, Physical Education, State Board of Education, California, 1918, Page 64.
    b. Flower and Wind—Supplement to Manual Physical Education, State Board of Education, California, 1918, Page 69. (Teacher has to control and guide the choice of the flower and the guessing.)
    c. Hill Dill—Supplement to Manual, Physical Education, State Board of Education, California, 1918, Page 70.
    d. Cat and Rat—Supplement to Manual, Physical Education, State Board of Education, California, 1918, Page 65.
    e. Hip Tag—Supplement to Manual, Physical Education, State Board of Education, California, 1918, Page 70.
    f. Whip Tag—Supplement to Manual, Physical Education, State Board of Education, California, 1918, Page 81.
    g. Going to Jerusalem—Supplement to Manual, Physical Education, State Board of Education, California, B., Page 98.
  2. Games with Apparatus—Games of simple organization, teaching elementary skills and neuromuscular coördination.
    a. Indian Club bowling with Soccer Ball, Chapter XXIX, page 450.
    b. Bean Bag Circle Toss—Bancroft, Page 305.
    c. Quoits—Played with light weight rings for horse shoes.
    d. Club bowls—Bancroft, Page 359.
  3. Ball Games of Simple Organization.
    a. Teacher and Class—Bancroft, Page 316.
    b. Dodge Ball—Bancroft, Page 363.
    c. Baseball, adapted.
  4. Rhythmical Games of Simple Organization with Big Muscle Activities, adapted to age period.
    a. Nuts in May—Supplement to Manual, Physical Education, State Board of Education, California, 1918, Page 44.

b. Looby Loo—Supplement to Manual, Physical Education, State Board of Education, California, 1918, Page 39.
c. Indians—Clark, Page 157.
d. A Hunting We Will Go—Supplement to Manual, Physical Education, State Board of Education, California, 1918, Page 33.
e. Did You Ever See a Lassie—Supplement to Manual, Physical Education, State Board of Education, California, 1918, Page 26.

5. Corrective Games—With emphasis on one or all of the above, with some corrective value.
   Pussy Wants a Corner on Wall—Chapter XXIX, page 448.
   Ten Steps with Posture Element—Chapter XXIX, page 449.
   Mental Arithmetic—Chapter XXIX, page 453.
   Quiet Circle Foot Games—Chapter XXIX, page 457.
   Musical Marbles—Chapter XXIX, page 459.

2. Accelerated Groups.

A. Introductory Notes:

The very bright boys and girls mentally that are assigned to accelerated groups are apt to be nervous and high strung. They are quick to react both mentally and physically. In many instances they are the physiological overactive, lithe types of individuals. (See Type Considerations, Chapter IV, page 38.) Many of these boys and girls have the postural defects characteristic of the thin lithe type.

B. Corrective Exercises Recommended.

See Schedules of Exercises, Corrective Physical Education, Elementary, Chapter XXVI.

See Schedules of Exercises for Specific Conditions, Chapter XXVII.

The method of teaching must be guided so that these boys and girls are interested but not overstimulated. The activity program for this group should be a developmental one with strong influence for quieting and toning down highstrung individuals, instead of taking them to the point of fatigue or beyond.

C. Dramatic and Rhythmical Activities—Games.

1. Dramatic Pantomime—See Chapter XXX, page 473. Dramatic activities and exercises with difficult coördinations are recommended to challenge their interest and mental ability.

2. Balance Board Exercises—See Chapter XXVIII, page 424. Exercises to develop poise and control are recommended.
3. Games and Dancing as outlined for Regular Groups (see Schedule of Activity, Organization, Chapter XVII, page 163), but because of the tendency to overdo that characterizes this group, distances should be shortened and time for playing limited. Effort should be made to give responsibility to the boys and girls in the organization of the games and conduct of the activities in order to challenge their interest, skill and mental abilities, and at the same time to safeguard their strength and endurance.
4. Frequent Rest Periods recommended.

IV. Exercises with Special Rhythms.

A. Introductory Notes.

Rhythms, limericks, nursery rhymes, and popular songs are given for corrective exercises to relieve the monotony and to stimulate and interest the group. Especially applicable for girls' work and work with small children.

B. Exercise to Limericks and Nursery Rhymes.

| Exercise | Limerick |
|---|---|
| 1. Long Sitting Position. | (See Fig 83, page 393.) |
| Curl toes—One! | Curl—One! |
| Turn balls of feet toward each other—Two! | Together—Two! |
| Bend ankles upward—Three! | Chop off your nose (the feet are together like a chopping knife and the direction is always toward the face)—Three! |
| Relax—Four! | Relax—Four! |

2. Long Sitting Position. (See Fig. 84.)

R. leg crossed over L., R. foot arching, keeping toes curled, make a circle starting outward-downward, inward-upward (strong emphasis on the in and up movement, none on the out and down)—One!
Relax—Two!
Sing to waltz time.

3. Hook Sitting Position, Feet Toeing In. (See Fig. 77, page 361.)

Arch feet as cat arches back (keep heels stationary on floor)—One!
Relax—Two!
As foot is arched when toes are being curled.
Use one to three of the limericks a day.

1. Ishegan Hooligin had a p-ig
   And he was double ge-hointed,
He tried to make er him dance er gi-hig,
   But he was dis-a-pa-hointed.

2. There was a young lady from Worcester,
Who used to crow like a Rooster,
She u-euster climb two trees at a time,
And her si-ester u-ester boost her.

3. The leopard shed a great tear and said,
   Oh, my life is so drear,
I'm covered with spots and big ugly dots,
   And stripes are the fashion this year.

4. Standing Position.

Rotate the thighs outward, turn knees outward, grip buttocks together, twisting thighs outward (keep big toe joints on floor)—One!

Return—Two!

(Use One—Two—Buckle My Shoe—in Mother Goose.)

5. In Bean Porridge Hot given in social exercises it has been found that the pupils get quite as much fun out of the instructor's direction given rhythmically as in the rhyme.
   1. Down—up—together.
   2. Down—up—together.
   3. Down—together—hit like a cat.
   4. Hit like a cat and down.

6. Many exercises during the year will definitely have the rhythm of some nursery rhyme or popular song. The day will be happier for the pupils if the teacher spontaneously starts the class singing or whistling, or she herself sings or repeats the rhyme. Only try it with a desire to please their æsthetic sense, or fun sense, or whatever you call it and see if you are not repaid by the light in their eyes. See Book of Limericks for others.

C. Foot Games to Rhymes.

1. Bean Porridge Hot (Music: Supplement to Manual, State Board of Education, California, 1918, Page 17).

Two sit facing each other, Circle or Line Formations. Feet about Four Inches from Partner's Feet.

Hook Sitting Position.

Play thus:

1. Bean—Feet down (keep heels stationary), tap balls of feet to floor.

2. Porridge—Draw feet upward toward body—backward.
3. Hot—Place balls of feet together.
   Repeat—Bean Porridge Cold.
4. Bean—Down, tap balls of feet to floor.
5. Porridge—Balls together.
6. In the—Turn right foot inward and make a little slap diagonally toward partner (as a kitten uses its paw).
7. Pot—Balls together.
8. Nine—Left foot diagonally forward.
9. Days—Balls together.
10. Old—Feet straight.

2. Tap, Tap Partner—Tap, Tap Neighbor with feet.

Music: Dance of Greeting. Supplement to Manual, State Board of Education, California, 1918, Page 24.

Circle or Line Formation.

Hook Sitting Position (sitting on floor, knees bent—feet parallel, 2 or 3 inches apart on floor, hands at sides and on floor).

Clap—Curl toes and tap floor (keep heels stationary).
Clap—Curl toes and tap floor (keep heels stationary).
Partner—Clap balls of feet together (keep heels stationary).
Clap—as above.
Clap—as above.
Neighbor—Turn balls of feet toward each other and cross feet (keep toes curled and heels stationary).
Stamp—Curl toes—Tap R.
Stamp—Curl toes—Tap L.
1-2-3—Curl toes—Tap R.—L.—R.
Chorus—Tra La—Curl toes and with outer edge of foot on floor—draw R. toward L.—L. toward R.—R. to L., etc., to end of Chorus.

3. Foot Rotation to Yankee Doodle. (See Fig. 84, page 394.)

Circle or Line Formation.

Long Sitting Position (Sitting on floor with feet extended, hands at sides and hands on floor.)

Curl your toes—Curl toes.
Curl them tight—Curl toes.
Put your foot upon your knee—Place R. foot upon L. knee.
Out-down, In and Up—Let the foot go in a circle, starting *out*-down in and up (starting out means that

the circle starts in the little toe direction—emphasis on the in and up movement, none on the out-down). Make a Circle Round it—Repeat—Out-Down, In and Up.

Chorus—Make a Circle. Repeat—Out-Down,
Make it big. ‘‘ In and Up
Make a Circle Round it. ‘‘ (accent on
Make a Circle. ‘‘ In)
Make it big. ‘‘
Make a Circle Round it. ‘‘
Same L.

V. Exercises with Special Word Commands.

A. Introductory Notes.

Words to indicate the position to be assumed may be used as Commands for Corrective Exercises. Words indicating the position to be assumed as ‘‘Commands’’ are especially applicable to small groups in corrective classes. It is possible to eliminate the more formal command and use the informal method of telling the class what to do. Explanatory Notes, or words of warning, as used in Exercises presented formally may be made the actual commands. The use of such commands brings about a more definite execution of the exercises and gives the student additional knowledge of the position to be assumed by means of the picture presented by the words used. It is helpful also to use ‘‘Hold’’ with ‘‘Commands’’ or ‘‘numerals used as commands,’’ to emphasize correct form and to emphasize the necessity for holding the position.

B. Exercises—Special Commands.

1. Hook Lying Position.
   Curl toes—One! or *Curl*—Hold.
   Turn balls of feet towards each other until toes touch—Two or Touch! Hold.
   Bend ankles upward—Three! or *Bend*—Hold.
   Relax or Position—Four!
2. Hook Lying Position.
   Curl toes—*Curl.*
   Place the foot upon the knee, hold toes in curled position—*Place.*
   Down Again! (Foot in Position.)
3. Hook Lying Position.
   Contract abdominal muscles, press back to the floor—*Press! Relax!*

4. Hook Lying Position.
   Place soles of feet together and separate the knees—*Separate Knees!*
   Raise legs (knees separated) to chest—*Raise to chest!*
   Return—*Return!*
   Position—*Position!*

5. Standing Position on Boards.
   Bend trunk forward, touch hands to boards—*Touch!*
   Return, pushing head up strongly—*Push!*
   Place R. hand on lower abdomen, L. hand in small of back—*Hands in Position!*
   Hands on Hips—*Position!*

6. Stride Standing Position, Hands on Hips.
   Stride Sitting Position on Bench, Hands on Hips.
   Bend trunk R.—*Bend!*
   Return—*Raise!*
   Bend trunk L.—*Bend!*
   Return—*Raise!*

VI. Rhythmical Drill for Boys and Girls—4-5-6 Grades.

A. Introductory Notes.

Drill presenting big muscle activities, emphasizing the play element and corrective values. Drill is planned for large groups—regular physical education classes—for 4-5-6 grades.

B. Rhythmical Drill—Posture Training.

## RHYTHMICAL DRILL—POSTURE TRAINING

### LARGE GROUPS—REGULAR PHYSICAL EDUCATION

Music
  Records:
    Our Director March.
    March of the Little Pierrots.
    Officer of the Day March.

  Piano:
    Vienna March.
    Stars and Stripes Forever.

In executing this drill to music, if emphasis is placed on accuracy and form in each movement the position of the body segments will be greatly improved. Also because of the big muscle and dramatic activities suggested, play and recreational values can be obtained.

I. Rows numbered No. 1 and No. 2, from R. to L. Ones and Twos standing arm's distance from each other.

1. Upper Back.
   Arms side horizontal—One!
   Turn palms upward—Two!
   Return—Three!
   Position—Four!
   16 counts in all.

2. Recreational—Jump.
   Jumping rope.
   Hold rope in hands, as in jumping rope—turn rope and jump, heels together. (Jumping lightly on balls of feet, toeing forward.)
   16 counts in all.

3. Big Muscle Group—Feet.
   Hands on neck, place R. foot sideward, turn feet toward each other (pigeon-toe position)—One!
   Twist trunk all way (twist all way using trunk and leg muscles)—Two!
   Return—Three!
   Position—Four!
   Same Left—16 counts in all.

4. Recreational—Jump.
   Jumping rope.
   Hold rope in hands at sides, turn rope and jump step hop R. swing L. in front, step hop L. swing R. in front and continue. Jumping lightly on balls of feet, toeing forward.
   16 counts in all.

II.

1. Upper Back.
   Arms bend—One!
   Stretch R. upward—L. downward—Two!
   Return—Three!
   Position—Four!
   Same Left—16 counts in all.

2. Recreational—Rocking Doll. Girls
   Hold doll in arms extended forward and swing to R.—One!
   Swing to L.—Two!
   Return R.—Three!
   Arms in front of body, holding doll—Four!
   Same L.
   16 counts in all.

2. Recreational—Playing Marbles. Boys.

   Place R. foot back and kneel on R. knee—One!
   Lean trunk forward, place R. hand in position for shooting—Two!
   Shoot—Three!
   Position—Four!
   16 counts in all.

3. Big Muscle Group—Feet.

   Bend arms, place R. foot forward (both feet toeing forward)—One!
   Bend R. knee, stretch R. arm upward, L. downward, incline trunk over R. knee (head and trunk in line with R. leg)—Two! (Keep L. heel down—to stretch the muscles of back of L. leg.)
   Return—Three!
   Position—Four!
   Same L.
   16 counts in all.

4. Recreational—Place Doll in Cradle. Girls.

   Hold doll in arms extended forward—4 small steps forward on balls of feet—toeing forward, R.—One! L.—Two! R.—Three! Heels together—Four!
   Lower doll to cradle (bend trunk forward)—One! Two! Three! Four!
   Raise trunk, hands at sides—One! Two! Three! Four!
   Return to position, walking backward, L.—One! R.—Two! L.—Three! Heels together—Four!

5. Recreational—Playing Indian. Boys.

   R. hand over eyes—as if looking into forest—four small running steps forward on balls of feet, toeing forward, R.—One! L.—Two! R.—Three! Heels together—Four!
   Place R. foot forward, bend R. knee, trunk inclined over R. knee, both feet toeing forward—peer farther into the forest—One! Two! Three! Four!
   Place L. foot forward, bend L. knee, trunk inclined over L. knee, both feet toeing forward—peer farther into the forest—One! Two! Three! Four!
   Return to position, walking backward, hands at sides, L.—One! R.—Two! L.—Three! Heels together—Four!

III.

1. Upper Back.

   Arms forward bend—One!

Extend R. arm sideward, L. hand at R. shoulder, elbow bent as in forward bend position—Two!
Return—Three!
Position—Four!
Same L.
16 counts in all.

2. Recreational—Jump.
   Place R. heel in front—One!
   Change weight, place L. in front with a hop—Two!
   Continue 16 counts.

3. Big Muscle Group—Feet.
   Arms forward bend, place R. foot sideward, turn feet toward each other (pigeon-toe position)—One!
   Trunk bending sideward—Two!
   Return—Three!
   Position—Four!
   Same Left—16 counts in all.

4. Recreational—Jump.
   Place R. heel sideward—One!
   Change weight, place L. sideward with a hop—Two!
   Continue 16 counts.

IV.

1. Upper Back.
   Place hands on top of head, R. foot forward (weight evenly divided, feet toeing forward)—One!
   Push head and hands up, chin in, stretch upward as tall as possible (keep heels down and be sure weight is evenly divided)—Two!
   Return—Three!
   Position—Four!
   Same L.—16 counts in all.

2. Recreational—Skipping.
   Skip forward, starting R., toeing forward (8 steps)—4 counts.
   Skip backward, starting L., toeing forward (8 steps)—4 counts.
   Repeat—16 counts in all.

3. Big Muscle Group.
   (Rows numbered from R. to L. 1 and 2.)
   Jump feet stride—No. 1's facing No. 2's, take hold of hands—One! Two! Three! Four!
   No. 1's pull No. 2's. No. 2's bend trunk forward (elbows

bent, keep upper back flat; keep head in line with trunk, No. 1's remain erect in pulling—One! Two! Three! Four!
No. 2 pulls No. 1 (as above)—One! Two! Three! Four!
Jump heels together and face front both No. 1 and No. 2—One! Two! Three! Four!

NOTE: Sufficient time must be given each movement in this exercise to insure correct execution. If positions are not checked accurately the tendency in bending the trunk forward will be to let head and shoulders drop forward. Emphasis for pupil bending forward—Elbows bent slightly with arms extended forward. Upper back flat and head in line with trunk.

4. Recreational—Skipping.
   Skip, toeing forward, No. 1's and No. 2's take R. hands turning in place—8 steps, 4 counts.
   Skip, toeing forward, No. 1's and No. 2's take L. hands turning in place—8 steps, 4 counts.
   16 counts in all.

V.

1. Upper Back.
   Arms to diagonal, palms in—One!
   Pull down as if against resistance to arm bend position (keep back flat)—Two! Three! Four!
   Repeat—16 counts in all.
2. Recreational—Swinging.
   No. 1 and No. 2 face and join hands. Swing arms to front of room, balance to front of room, place weight on foot toward front of room—One!
   Same to rear—Two!
   To front—Three!
   Stop swing of arms in center—Four!
   Same starting arm swing and balance to rear—One! Two! Three! Four!
   Repeat—16 counts in all.
3. Big Muscle Group—Feet.
   Arms side horizontal, place R. foot forward—One!
   Bend R. knee, bend trunk forward and touch hands to floor in front of R. knee—Two! (To stretch muscles at back of L. leg.)
   Return—Three!
   Position—Four!
   Same L.—16 counts in all.
4. Recreational—Turning inward, keeping hands clasped.
   No. 1 and No. 2 join hands. Turn forward and inward

under arms, keeping hands clasped (turn halfway)—One! Two! Three! Four!
Complete turn, keeping hands clasped—One! Two! Three! Four! Repeat—8 counts—16 counts in all.

VI.

1. Upper Back.
   Clap hands over head—One!
   Extend R. arm side horizontal, twist trunk R. and clap hands on R.—Two!
   Extend L. arm side horizontal, twist trunk L. and clap hands on L.—Three!
   Arms to sides and clap hands to sides—Four!
   Same L.—16 counts in all.
2. Recreational—Kneeling.
   Kneel R. knee—One!
   Kneel L. knee—Two!
   Place R. hand on floor—Three!
   Place L. hand on floor—Four!
   Raise L. hand from floor, One!
   Raise R. hand from floor—Two!
   Raise L. knee from floor—Three!
   Raise R. knee from floor—Four!
   Repeat—16 counts in all.
3. Big Muscle Group.
   Draw hands along sides until hands are under arms, turn R. knee out, raise by bringing R. foot to L. knee—One!
   Arms side horizontal, palms down, extend R. leg sideward—Two!
   Arms to side, feet together—Three!
   Hold—Four!
   Same L.
   Repeat—16 counts in all.
4. Recreational—Leap Frog.

| *No. 1* | *No. 2* |
|---|---|
| Kneel on R. knee—One! | Turn in towards No. 1—One! |
| Kneel on L. knee—Two! | Step to rear of No. 1—Two! Three! |
| Place R. hand on floor—Three! | Face forward—Four! |
| Place L. hand on floor—Four! | |
| | Bend forward—place hands on back of No. 1—One! Two! |
| | Jump over—Three! Four! |

| | |
|---|---|
| Remain in place—4 counts. | Turn and bend forward—place hands on back of No. 1—One! Two!<br>Jump over—Three! **Four!** |
| Remain in place—4 counts. | Returns to own position. |
| Raise L. hand—One! | Turn—One! |
| Raise R. hand—Two! | Step to place—Two! Three! |
| Raise L. knee—Three! | Face forward—Four! |
| Raise R. knee—Four! | |

Repeat last. No. 1 Jump—No. 2 Kneeling.

VII. Tilted Balance Board Exercises for Groups. To be adapted for College, High School, Junior High School and Elementary Groups.

A. Introductory Notes.

Exercises on the Balance Boards with passive posture and foot corrections.

B. Standing.
1. Free Hand Exercises.
2. Bounding Balls.
3. Wands.
4. Dumb Bells.
5. Indian Clubs.
6. Additional Exercises.

C. Marching.
1. Low Boards.
2. High Boards.

1. Free Hand Exercises on Tilted Balance Boards. (See Fig. 91.)

Pupils stand on balance boards with spaces usually used on the floor in open order. Girls get fatigue symptoms early in this drill and should be given frequent rests or the whole benefit of the drill is defeated. No backward leg raising exercises are given and no strong shoulder blade movements are given unless an abdominal exercise is added.

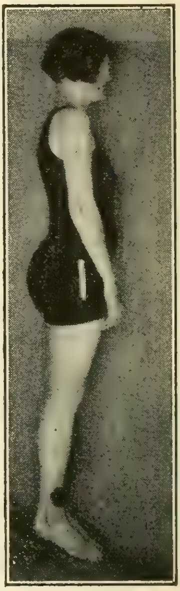

FIGURE 90
Standing Position—Inclined Balance Board—Showing the Effect of High-heeled Shoes on Gravity Line of Body. Note Segmental Deviations

1. Rise on the heels—One!
   Lower—Two!
   Continue eight times.
2. Hold hands with person on boards opposite.
   Raise R. leg forward, bend L. knee slightly—One!
   Return—Two!

3. Palm turning outward with deep breathing—One!
   Exhale—Two!

4. Bend arms upward—One!
   Stretch sideward slowly and firmly—Two!
   Lower slowly, trying to keep the back broad—Three!

5. Hold board in both hands, thumbs outward behind the back.
   Lower head forward, draw the chin in and move head backward firmly—Turkey Gobbler—One!
   Relax—Two!

6. Raise arms sideward shoulder high and raise R. knee upward-outward—One!
   Raise arms slowly over head and stretch the R. leg forward—Two!
   Arms sideward lower to shoulder with knee bend—Three!
   Position—Four!
   Repeat L.
   Do not sway body backward. Go only as far as it is possible to go in correct position.

7. Board on head.
   Hold trunk firmly, lower trunk forward until a hamstring stretching is felt—One!
   Return—Two!

8. Board on head.
   Raise R. leg sideward and raise arms sideward shoulder high—One!
   Swing R. leg forward and place hands on neck—Two!
   Swing leg sideward and arms sideward—Three!
   Position—Four!

9. Hand turning outward with deep breathing.

2. Bounding Balls.

Music: Waltz time.

While gaining passive correction of feet and legs the muscles of the head and shoulders are activated and much correction and joy may be had from this drill.

Hand balls or bounding balls are used and the pupils stand upon balance board with usual spaces as for class-work on the floor.

1. Place L. hand upon the hip. Starting with the ball on the breast bone (sternum) and the back of the R.

hand uppermost describe an outward arm circle as in Indian Clubs. When the hand approximates the L. shoulder joint, toss the ball directly upward over the head—not too far to lose rhythm but far enough to necessitate the bending of the head backward to watch the ball—One!
Catch—Two!
Continue eight times R.
L.—eight times.

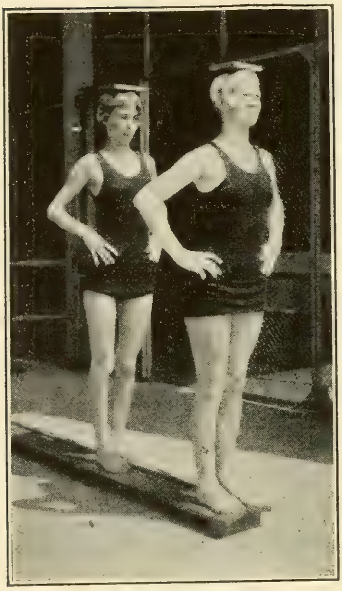

FIGURE 91

Standing Position on Tilted Balance Board, Posture Boards on Head

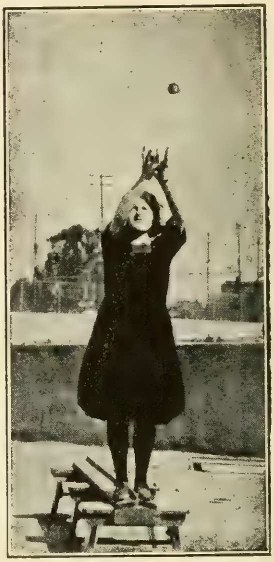

FIGURE 92

Standing Position on Tilted Balance Board—Bounding Balls

Throw with R. and catch L.—throw with L. and catch R.—alternating eight times. Hold the ball in R. hand but make double arm circles—eight times.

2. The R. arm (holding the ball in right hand) is extended outward shoulder high. Swing arm up and over until it is in line with the shoulder (making a circle but not across the chest). Bounce the ball on the floor at right of balance board—One!
Catch again—Two!
Repeat R.—eight times.
L.—eight times.

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3. Hold ball on R. shoulder.
   Allow to drop on the floor behind (do not throw because it will be out of the arc and rhythm)—One!
   Catch—Two!
   R.—eight times.
   L.—eight times.

4. Hold ball in R. hand and raise sideward upward over head. Twist body R. and hold L. hand just below the chest on the R. side—One!
   Drop the ball from R. into the L. hand—Two!
   Twist left—Three!
   Drop from L. to R. hand—Four!
   Alternate sides.

5. Hold ball in R. hand.
   Raise R. arm sideward upward and place ball on top of the head and bend L.—One!
   Straighten and lower arm to shoulder level—Two!
   Bend L. again and carry R. arm over the head, bounce the ball on the left side—Three!
   Catch it with the left—Four!
   Use L. arm and bend R.
   Continue alternating.

6. Hand turning outward with deep breathing.

Ball may be combined with various leg exercises. An additional drill using two balls may be used.

Formation: Couples facing each other. Standing four or five paces apart let one girl place her ball upon the floor.

1. Both girls execute outward arm circles whether they are throwing or whether they are catching. On the first measure make the arm movement. On the second measure one throws and the other catches. The next time it is the reverse.
   Continue.

2. One girl bounds the ball and the other catches on the first measure and both execute the completion of the arm movement on the second measure.
   Continue.

3. Use two balls and repeat Exercise 1. Use two balls and repeat Exercise 2.
   Many runs, bending and kneeling may be added. See Bancroft.[1]

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[1] See "Games for Playground, Home, School and Gymnasium," Bancroft.

3. Wand Drill.

   1. Place wand on chest.
      Touch toe forward with R. foot—One!
      Lower wand and replace foot—Two!
      Repeat eight times R., eight times L.

   2. Raise wand sideward R. to horizontal (keep left elbow on top of the wand)—One!
      Lower—Two!
      Eight times R.
      Eight times L.

   3. Place hands the distance of one hand apart on wand.
      Raise wand to chest (keep elbows above it), rise on heels—One!
      Lower—Two!
      Continue eight times.

      Note: Guard against tendency to sway body backward.

   4. Hands shoulder distance apart.
      Forward walk position R. four times, L. four times.
      Raise wand over head with deep breathing—One!
      Lower and exhale—Two!

   5. Raise wand to high vertical R.
      Raise left leg sideward—One!
      Lower—Two!
      Eight times R.
      Eight times L.

   6. Raise wand over head.
      Raise R. knee outward upward—One!
      Lower wand behind shoulders and stretch leg forward —Two! (Slowly.)
      Wand over head, bend knee—Three!
      Position—Four!
      Four times R.
      Four times L.

   7. Wands in front of body with arms at sides.
      Deep breathing.

4. Dumb Bell Drill.

   The dumb bell drill used is a modification of the Sargent Dumb Bell Drill as the charges and lunges must necessarily be changed for balance board base.

Twist dumb bells outward vigorously eight counts in the following places:

Arms.

1. Down.
2. Out sideward, shoulder high.
3. Over the head.
4. Arm bend position.

Arms—Charge.

Starting with bells on shoulder, thrust bells downward—One!
On chest—Two!
Charge forward R., bending R. knee and keeping L. knee straight (keep both heels on the board). Swing R. arm forward, upward diagonally and L. diagonally backward—Three!
Hold—Four! Five! Six! Seven!
Return—Eight!
Repeat L.

Note: Especially applicable for tight hamstrings and heel cords.

Arms.

Dumb bells on the chest.
Thrust L. dumb bell downward twice.
R. twice.
L.—R.—L.—Rest.
Both twice.
Repeat this rhythm—outward, upward, forward.

Charge.

Stand fast—One! Two!
Charge forward with dumb bells standing on shoulders—Three!
Hold—Four! Five! Six! Seven!
Return—Eight!
Do four times R. and four times L.

Arms.

Raise L. arm sideward upward shoulder high—One!
Lower—Two!
Up—Three!
Down—Four!
Same R.
Alternate L.—R.—L.—Rest.
Both twice.
Hand turning outward with deep breathing.

5. Indian Clubs.

A. Introductory Notes.

Any regualr Indian Club drill may be used but it is better to rest with occasional trunk and head movements to relieve fatigue.

Class standing on tilted balance boards in regular open order. Usually there is not room for forward arm circles. Sometimes with care it can be arranged.

Indian Clubs are used as in the regular Indian Club exercises and held in the middle to imitate dumb bells in order to give more variety of exercises and less difficult coördination.

Regular Indian Club Position.

1. Outward arm circle R.—eight times.
2. Outward arm circle L.—eight times.
3. Double outward arm circles—eight times.
4. Rest. Relax—close eyes—open mouth—drop head, relax shoulders and waist—One!
   Straighten—Two!
   Four times.
5. Stand.
   Turn palms outward and inhale.
6. Inward arm circles, R.—four times.
   Inward arm circles, L.—four times.
   Double inward arm circles—four times.
7. Parallels R.—eight times.
8. Parallels L.—eight times.
9. Place clubs upon the floor and shake hands down at the sides, out shoulder high, forward shoulder high and down again—eight counts each.
10. Inward arm circle—One!
    Turn clubs back into forearm—Two!
    Straighten again—Three!
    Outward arm circle to position—Four!
    Repeat eight times.
    A slight knee bend may be given on count 2 if desired.
11. Kneeling or Cross Sitting Position.
    Hand circles are taught kneeling on one knee or Cross Sitting Position to insure a flat back and real shoulder effort. As soon as the outward hand circle is mastered on both sides, stand.
12. Outward arm and hand circles R.—eight times.
    Outward arm and hand circles L.—eight times.
    Double outward arm and hand circles—eight times.

NOTE: Sometimes it is enjoyable for some girl to work up a drill using cherry blossoms. If a mat is available some of the exercises may be easier kneeling on both knees.

13. Deep breathing.

While this is long enough for most physical education periods the additional list may be used if desired.

1. Clubs are held as dumb bells.
   Touch step forward R. and raise bells sideward shoulder high—One!
   Put bells on shoulder and raise R. knee diagonally upward—Two!
   Touch step and straighten arm sideward—Three!
   Position—Four!
   Same L.
2. Raise bells sideward upward—One!
   Place bells on hips—Two!
   Bend to right—Three!
   Straighten—Four!
   Bend to left—Five!
   Straighten—Six!
   Arms sideward shoulder high—Seven!
   Position—Eight!
3. Place R. bell on chest—One!
   Place L. bell on chest.
   Stretch R. arm sideward—Three!
   Stretch L. arm sideward—Four!
   Hit base of bells—Five!
   Hit behind back—Six!
   Hit in front—Seven!
   Position—Eight!
4. Place bells on hips—One!
   Raise R. leg sideward—Two!
   Lower leg—Three!
   Arms down—Four!
5. Place bells on shoulder—One!
   Lower head forward—Two!
   Raise—Three!
   Position—Four!

**6.** Additional Exercises for Rhythmic Work on Tilted Boards. First pupils on each board mount together.

1. Bend head to R.—One!
   Raise—Two!
   Bend head to L.—Three!
   Raise—Four!

Walk three steps forward and close.
Repeat exercise and steps to end of board.
Dismount and walk around to rear and start another exercise.

2. Head R. twist—One!
Head front—Two!
Head L. twist—Three!
Front—Four!
Walk three steps forward and close four.

3. Move backward across the board slowly.
Raise R. leg sideward slowly—One!
Swing outward in a circle and place behind and step backward—Two!
Same L.
Continue across the board.

Note: By pointing heel backward and keeping foot parallel to board greater precision, correction and orientation are obtained.

4. Bend trunk forward and raise arms forward upward shoulder high and snap fingers—One!
Remain bending forward and move arms sideward shoulder level and snap fingers—Two!
Move arms forward again and snap fingers—Three!
Raise trunk and place hand on hips—Four!
Proceed across board.

C. Marching.

1. Low Tilted Balance Boards.

Exercises may be taken slowly to count standing at one place on the balance boards or they may be done to music as a rhythmic drill. The following drill is marching calisthenics to music.

Equipment:
As many tilted boards as desired.
As many files as there are tilted boards.

Hands on Hips.
Start with R. leg.
First girl on each board mounts.

1. Raise R. knee outward upward—One!
Kick forward diagonally (not pointing toe and not swaying backward)—Two!
Bend—Three!
Step—Four!
Change L. and continue to the front of board.
At the end of each exercise dismount and pass around to the back and remount in turn.

Hold head board behind back with both hands, palms are on boards and thumbs outward.

2. Lower head forward—One!
   Raise head with chin in—Two!
   Bend head backward—Three!
   Raise head with chin in—Four!
   Take three steps forward and close on four and repeat to end of board.
   Alternate exercise and steps.
3. Boards on heads.
   Lower trunk forward—One! Two!
   Raise—Three! Four!
   Walk forward three steps and close.
   Repeat.
4. Boards on heads.
   Raise arms sideward shoulder high—One!
   Curl arms overhead and place tips of fingers on board —Two!
   Bend body R.—Three!
   Straighten—Four!
   Walk forward holding hands above head as if the board were a water jug.
   Repeat to the end of the board alternating exercise and steps.
5. Raise R. leg sideward—One!
   Replace one step in advance—Two!
   Alternate legs to end of board and dismount.
6. Hold the board in one hand and using it as if it were a tambourine hit it over the head with the other hand, then under R. and L. knees, alternating.
   Over the head and hit—One!
   Under knee—Two!
   Cross the board in this way.
7. All stand on the tilted boards with posture boards on heads and turn hands outward with deep breathing.

This drill has practically the right number of exercises for one day. It may be repeated for better form in execution.

2. High Tilted Balance Boards.

The variety of exercise is somewhat limited (see Value, Chapter XI, page 99) on the high board, but all corrective values are increased. The exercises are somewhat less varied but the additional coördination required at a height keeps the pupil's interest. Three long boards are used and marching or walking exercises across the board each time. Repeat previous drill on high boards before attempting the new drill.

The outside files do the same exercises except that they each start with their outside hand or foot. The inside row alternate sides as they progress backward in their line. That is, the file is number 1, 2, 3, 4, etc., and 1 and 3 start exercises with the same hand or foot and 2 and 4, etc., work together.

Outside files:

Arms Sideward Shoulder High in Starting Position. The outside hand holds the head board.

Raise outside hand over head—One!
Raise inside hand and change board from one hand to the other—Two!
Lower the inside hand which now holds the board—Three!
Lower the outside arm—Four!
Walk forward three steps and close.

Inside file:

Meanwhile does this:

Boards are upon the heads. Do not mount until outside files have taken their three steps. Do exercises together.

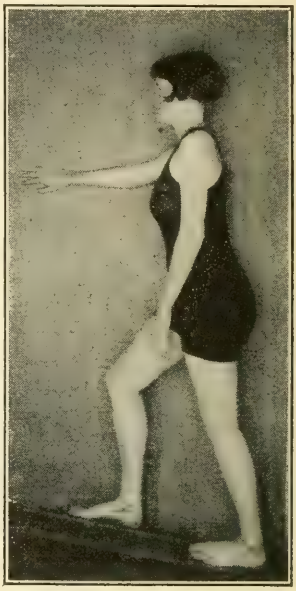

FIGURE 93

The Use of Inclined Tilted Balance Board to Stretch Tendo Achillis—Keep Heel of Rear Foot on Board

3. High Tilted Balance Boards.

1. Raise arms sideward shoulder high—One!
   Raise arms over head and bend knees slightly—Two!
   Arms shoulder high, straighten knees—Three!
   Position—Four!
2. Walk forward starting L. with boards upon the head three steps and close on four.
   Repeat as above starting R. foot.
3. Outside files:
   Hold board in outside hand.

Raise outside knee and pass board underneath to the inside hand—One!
Inside hand gives it back to outside hand—Two!
Outside hand passes it behind the body to the inside hand again—Three!
Inside hand during one count rests it above hip—Four!
Walk forward three steps and close on four.

Inside file meanwhile holds hands on the shoulders with board in the outside hand.
Place board on the head and hold it—One!
Touch it with the other hand—Two!
With the outside hand pass it behind the neck (other hand remains on head)—Three!
Take it with the other hand and place both hands upon the shoulders—Four!

4. Exchange exercises.

It will be found that this is more than a day's order. The coördinations are difficult. Passive correction of feet and legs is going on all the time. It depends upon the class whether the complicated exercises are popular.

# PART V

# CHAPTER XXIX

## Corrective Games

## INTRODUCTORY NOTES

### Values to Be Obtained

In developing this phase of activity the following values should be considered:

1. Remedial for:
    - a. General posture.
    - b. Local postural faults.
    - c. Heart, anæmias, undernutrition.
    - d. Faulty neuro-muscular habits.
    - e. General metabolism and elimination.
2. Competitive for:
    - a. Maintaining interest and attention.
    - b. Developing group activity and team work.
3. Recreative for:
    - a. Developing play instincts.
    - b. Relaxing nerve and muscle tensions.

We recognize that in practically all of these activities, there are combined values, and this fact emphasizes our preference for the use of certain ones, that is, those having a marked corrective value. Games which require the tilted balance board and those in which the sitting and recumbent positions are necessary, have splendid values for corrective classes.

For influencing generally relaxed postures, an effort is made to get a spinal ''push up,'' good head position, and correct foot and leg action. An especial effort is made to avoid or modify all movements which would tend to cause faulty positions, or to exaggerate existing deviations, such, for instance, as occur in the use of ''arms upward and backward,'' or ''head backward in standing position,'' because of the tendency to produce or increase lordosis in the lumbar region.

To improve local static deviations, as relaxed arches or pronated ankles, the marble games and stunt games involving foot work, such as playing jacks or jack-straws are used.

Muscular weakness, cardiac insufficiency and undernutrition are all affected beneficially by those games which retain competitive elements, and have technical difficulties of execution, but are restricted as to range and muscular exertion required, such as, for instance, the "Torch Game" or "Marble Hustle."

Students with faulty neuro-muscular action, tics, spasm of muscles, tremors, twitching, jerking, or moderate incoördinations, as well as the whole group of hyperactive individuals, are most benefited by activities emphasizing muscular control. These students are benefited chiefly by exercises in sitting and recumbent positions, restricted in range and requiring a maximum of poise. Satisfaction in competition should be retained, but undue excitement is necessarily controlled because it interferes with the form and technique required to win. Such activities must be of short duration, but of maximum interest, without reaching the point of fatigue.

## Corrective Fundamental Positions a Requirement

*All corrective movements should be made from corrective fundamental positions.* For instance, corrective movements for shoulders ought not to be done standing on a pair of flat feet with legs rotated inward and feet in the toe out position. Again, do not attempt correction of a lateral spinal curvature with student standing, if there is a pelvic tilt from a short leg or unilateral flat foot. Avoid every position of strain in all beginning groups; and especially in weak heart and poor posture groups. Avoid high degrees of concentration strain, or at least make these periods very short and carefully graduated, especially with the high tension overactive types of children. Likewise, with this group reduce to short periods the element of excitement, and follow all activities in which these two elements are a factor by a period of quieting work, such as muscle mass work in recumbency with deep breathing.

## Need for Recreational Activities in Corrective Groups

All students in corrective classes need play and recreational activities. Too frequently the corrective classes are cut off from the mental and physiological benefits of plays and games. The recreational activities designed for these groups attempt to meet the joy and play element required for these students, who are frequently both physiologically and psychologically "below par." They are also adapted to meet the physical capacity of the groups indicated. Functional heart conditions are so frequently found among the "below par" pupils that an endeavor has been made to select games which have the elements of fun and skill without too much speed. All of the games are suitable for functional heart cases if not played too long and too often. A long list of games should be at the disposal of the corrective teachers, not only from the point of view of variety, but also so that great skill and speed may not be acquired.

## Games to Be Adapted for Various Age Periods

Games presented may be adapted and used for all age periods. Slight changes and modifications may have to be made to make the games applicable for various groups. The games may seem simple to high school students, but if the teacher presents them as stunts, or a task (in the manner of solving a puzzle) they will be acceptable.

*Classification of Corrective Games:*

I. Athletic Games for Playground.
  A. Regular Sports—Selected—with Distances Limited.
    1. Baseball.
    2. Volley Ball.
    3. Punch Ball.
    4. Bat Ball.
    5. Schlag Ball.
    6. Captain Ball.
    7. End Ball.
    8. Side Kick (Kick Ball).
  B. Sports Adapted and Modified.
    1. End Hockey.
    2. Hockey Golf.
  C. Athletic Games of Lower Organizations.
    1. Newcomb (Net Ball).
    2. Volley Catch.
    3. Six Hole Basket Ball.
    4. Haley Over (Andy Over).
  D. Individual Athletic Games. (Dual and Small Group.)
    1. Croquet.
    2. Clock Golf.
    3. Golf Driving.
    4. Quoits.
    5. Archery.
    6. Swimming.
    7. Tennis.

II. Active Games—Hunting and Ball Games.
  1. Did You Ever See a Lassie?
  2. Pussy Wants a Corner on Wall.
  3. Ten Steps.
  4. Slap Jack or Tap the Rabbit.
  5. Fruit Basket with Posture Boards.
  6. Exchange with Posture Boards.
  7. Walking Three Deep with Posture Boards.
  8. Going to Jerusalem with Posture Boards.
  9. Statue.

10. Hang Tag.
11. Indian Club Bowling with Soccer Ball.
12. Bean Bag Circle Toss—Bancroft.
13. Stride Circle Ball with Variation.
14. Bat Ball Modified.
15. Ball Throwing Games.
16. Zig Zag.
17. Cross Hustle Board and Ball.
18. Drop the Board.
19. Black and White with Board.
20. Mental Arithmetic.
21. Ball Game on Backs.
22. Matt Ball.
23. Relays.
    1. Stride Stand or Cross Sitting—Over Head.
    2. Stride Stand—Over and Under.
    3. Shuttle Walk with Posture Boards.
    4. Basket Goal Relay.
    5. Cross Sitting and Standing.
    6. Torch Game Relay.
    7. Ball and Wand Relay.
    8. Wand and Board Relay.
    9. Over and Under.
    10. Inner Tube Relay.

III. Foot Games.

- a. Foot Games Standing.
    1. Quiet Circle Foot Game.
    2. Circle Chalk or Marble Race for Two.
    3. Pick Up the Marble.
    4. Circle Marble.
    5. Many Circle Marble.
    6. Musical Marble.
    7. Stride Sitting Circle Relay.
    8. Zig Zag.
    9. Marble Hustle.
- b. Foot Games Sitting.
    1. Marble Relay.
       Increase number of marbles.
    2. Sitting Marble Goal Throw.
- c. Social Games.
    1. Bean Porridge Hot.
    2. Tap Tap Partner, Tap Tap Neighbor.
    3. Foot Rotation to Yankee Doodle.
    4. Foot Exercises to Limericks.
    5. Board Pass.

        6. Train.
        7. Thread the Needle.
        8. Jenkins Down.
        9. Tongue Depressor Exercises.
    d. Foot Game Stunts.
        1. Jacks.
        2. Jack Straws.
        3. Cameron Baseball.
        4. Cynthia's Croquet.
        5. Tug of War.
        6. Writing.

IV. Tilted Balance Board Games.

    1. Board Hustle.
    2. "I Say Stoop."
    3. I'm so very, very tall.
    4. Shoe Pass.
    5. Board and Jack Relay.
    6. Sailor's Hornpipe.

## CORRECTIVE GAMES

I. Athletic Games for Playground.

A. Regular Sports—Selected—With Distances Limited.

1. Baseball—Spalding Rules.

    NOTE: INDOOR BASEBALL if not played too long gives the best psychological substitute for regular class games. Do not use "Scrub" as a substitute. There are too few players in this game and each pupil comes up to bat too frequently.

    INDOOR BASEBALL may be played on a small diamond on a small patch of grass in the shade. A volley ball may be used for a baseball. A broom may be used for a bat.

2. Volley Ball—Spalding Rules.
3. Punch Ball—Spalding Rules.
4. Bat Ball—Manual Physical Education, State Board of Education, California, 1918, page 159.
5. Schlag Ball—Field and Rules as Bat Ball except the ball is kicked instead of batted.
6. Captain Ball—Bancroft, page 338.

    NOTE: CAPTAIN BALL may be used provided that the instructor knows the class well. The heart cases should be in the circles. No rupture cases or post-operative appendix cases should play. Care should be taken that the players in the center do not have heart or lung conditions.

7. End Ball—Bancroft, page 1, Appendix.
8. Side Kick (Kick Ball)—Manual Physical Education, 1918, State Board of Education, California, page 165. The same rules as for Baseball except that the Soccer ball is used and the ball kicked instead of batted. The pitcher rolls the ball to the batter, who kicks it.

NOTE: These sports should be adapted to meet the needs of specific groups. The fields should be smaller to limit the distances, the actual playing time should be shortened and frequent rest periods should be given. On warm days walking may be substituted for running.

Value:

The value of using these sports for corrective and restricted groups:

1. Value in playing out of doors.
2. Psychological value in using the sports (modified) that are used in regular groups.
3. Value in skills involved.

B. Sports Adapted and Modified.

1. End Hockey—See End Ball—Bancroft, page 1, Appendix.

Field: Hockey played on an End Ball Court 50 yards by 50 yards. Line in center. End boxes as End Ball.

Players: Each team divided into Guards and End Men (End Ball, Guards and Catchers).

Position of Players: Eight Guards on Red team in Guards' Box, Red.

Two Ends on Red Team in End Box, Red.

One Red Goal Keeper in End Box, Blue, guarding Blue goal.

Blue—Same Guards' Box, End Box, Goal Keeper in End Box, Red, guarding Red goal.

Object of the Game:

After the bully on the center line between two guards, designated center forwards—the object of the game is for the Red Guards to drive the ball through the Blue Guards to their Ends in End Box Red and for Ends to make goal. *Note Carefully:* The center forward is the only guard who is allowed to follow the ball through. All other players play in their own territory—guards in Guards' Box—ends in End Box—goal keeper defending goal. The Blue Guards, of course, try to stop the ball that is making for the Red Goal, get it through the Red Guards' Box to their Ends, who in turn try to make a goal.

Center Forwards: Center forwards take bully at beginning of game and play entire field. Ball out of bounds or any transgression of Rules—25 yards. Bully taken by center forwards, on center line.

Note: The players playing center forward should be changed frequently, giving all players a chance to play all over the field and to take the bully.

Fouls and Out of Bounds: The ball goes to center line for bully by center forward.

Scoring: Score as for Hockey.

Describing One Play: Blue C.F. gets ball into Guard Box Red. Red Guard intercepts it, drives it into Blue Guard Box. Blue Guard intercepts it, passes it to Blue C.F. Blue C.F. passes it to End Blue. Blue End tries for goal. Red goal keeper keeps it from going into—drives it into Red Guards' Box, etc.

Remarks: The game gives opportunity for teaching the elements—the bully—drive—working for goal—goal guarding—passing—some work in attack and defense. The game is useful to teach elements to beginners, also for restricted classes—girls who wish to play hockey but are not able to do the running required in covering the entire field.

2. Hockey-Golf: For girls who can undertake only limited activities the following game used by Miss Bertha Keller at Monterey High School is recommended:[1]

Field: The field may be hockey, soccer, football or lawn course; flags to be placed 20 yards apart in an attractive and consecutive order.

Equipment: Nine poles from four to six feet high with flags designating each by number. Each individual needs a hockey stick and ball.

Value: See Value under Regular Sports with Distances Limited.

C. Athletic Games of Lower Organizations:

The rules for the following games are given because the games have been found to be especially valuable for corrective and restricted groups. They have a good competition element, but do not require strenuous effort in running, jumping, throwing, etc.

1. Newcomb (Net Ball).

Field: Volley Ball Court.

Players: The teams stand one on either side of a Volley

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[1] State Department of Physical Education, California, News Letter No. 9.

Ball net. The players stand so that the entire field is covered.

The Object of the Game: The object of the game is for team A to throw the ball over the net in such a way that the team B cannot catch it; in other words, to throw the ball over the net and make the ball hit the ground. Team B attempts to catch the ball to keep team A from scoring. Team B throws the ball over the net and the game continues. Throwing team scores when ball hits ground.

Fouls: The ball must go over the net and must land in bounds, otherwise a foul is committed and a point is scored for the other side.

Scores: Game may be played for 21 points, or the side with the largest number of points at the end of the period wins.

2. Volley Ball Catch.

Field: A Volley Ball court or a space the size of a Volley Ball court.

Players: One team, team A, represents the net and stands in a straight line in an area four feet wide. The other team, team B, stands half on one side of the net and half on the other side.

Object of the Game: The object of the game is for team B to serve (or throw) the ball over the human net in such a way that the players representing the net cannot stop or catch the ball, and so that their own players on the other side can catch it. Team B serves (throws for younger children) the ball over the net (the team A, representing the net, may face either way, preferably face the side that is throwing). Team B serves (or throws) the ball so that their fellow team members may catch it. Each time the ball is served (or thrown) successfully over the human net and caught, one point is scored for team B. When the ball is not caught, but hits the ground, a down is made. Three downs puts team B out and the B players take their places at the net. Team A is in the field, half on one side and half on the other side of the net. Team B is also out if team A is able to intercept and catch the ball as it is served (or thrown) over the net. Team A is allowed to step forward or backward in their four-foot area, which should be marked by lines, in their attempt to stop the ball. Ball intercepted but not caught by team representing net (A) counts a ''down'' for throwing team (B.)

Summarizing, the team is out when the ball hits the ground three times, three downs, or when the opponents in the net are successful in intercepting and catching the ball. After an out the teams change places and the game continues.

Scores: Game may be played for 21 points, or the side with the largest number of points at the end of the period wins.

3. Six-Hole Basket Ball—Manual of Physical Education, 1918, State Board of Education, California, page 158.

   Six three-foot circles are made in a semi-circle around the basket ball goal, 15 feet in front, 10 feet and 5 feet on the sides. The players line up and take turns in attempting to throw baskets, starting on the left side circle. Every basket made advances the player one hole and he continues to progress until he fails to make a basket. Two of the holes are marked safety. If a player overtakes another player in a hole *not* marked safety, the first player must return and start over again. The person wins the game who first makes the circuit of holes and returns to the starting point.

4. Andy Over (Haley Over) Supplement, Manual of Physical Education, 1918, State Board of Education, California, page 69.

   Grade: Grammar—High School.
   Number of players: 10 to 60.
   Apparatus: Ball; House, out-of-doors, or curtain, indoors.

   Two parties are formed. They stand on opposite sides of back stop. A player calls "Anthony Over," and throws the ball over the house. One of the opposite party tries to catch it. If he succeeds, he darts around to the other side of the back stop. There he may either throw the ball to hit one of the players or keep the ball in his hand and tag with it. If he succeeds in doing either, he takes the player whom he has hit or tagged back to his own side, and gives the ball to his opponents to throw again, because it is a disadvantage to throw the ball and an advantage to receive it. If he does not succeed, he stays where he is, with his opponents, and the ball is given to the side he has just left. If no one catches the ball when it is thrown over the house, the side that has failed to catch it calls "Haley Over" and throws it back. The uncertainty as to whether a ball is to be caught from over the wall, or whether a player will appear to tag gives point to the game. The side wins which gains all the players. A referee for each side may be appointed if necessary.

The game can also be played by throwing the ball over a curtain stretched in the gymnasium or in a large hall.

Values: Social and competitive values are excellent. Games teach skills useful in Sports for Regular Physical Education, but do not require strenuous effort.

D. Individual Athletics.

1. Croquet.
2. Clock Golf.
3. Golf Driving.
4. Quoits.
5. Archery.
6. Swimming.
7. Tennis.

Strictly speaking, croquet and golf cannot be considered active games, but as far as they apply to corrective classes they are, for the reason that they are played standing upright. Their value lies in the fresh air and sunshine obtained and the skills in the individual games which may further the future happiness and enjoyment of outdoor games for the students.

Tennis if not played by too skillful players offers much enjoyment and not any noticeable amount of fatigue.

Swimming is a glorious sport and with the water carrying most of the body weight the weak feet are temporarily relieved of their load.

II. Active Games, Hunting and Ball Games.

1. Did You Ever See a Lassie?

The traditional song game, in which the child suggests activity at the words ''Do this way and that way.''

Teacher may bring out corrective health values by substituting the correct way of brushing the teeth, etc., and by substituting exercises that will have corrective values as:

1. Touch R. heel forward, change to L. with a hop. Continue. (To stretch muscles at back of leg.)
2. Arms side horizontal with palms up. (Emphasize back flat, head up, chin in.)

   Value: Game may be made to bring out general or specific postural values or health rules.

2. Pussy Wants a Corner on Wall.

The traditional Game, Pussy Wants a Corner, except instead of standing in corners, use all wall space available. Have students stand with backs against the wall with knees bent sufficiently so that the entire back may be in contact with wall. (The pupil assumes a sort of sitting position on the wall. See Corrective Physical Education, Chapter XXVI, page 362.) The game is played according to the traditional rules. The pupils change positions on the wall instead of corners.

3. Ten Steps—Beef Steak—or Still Pond—No More Moving with Posture Element.

   Ten Steps or Beef Steak is one of the most popular traditional games with children from five years up to fifteen. The game has proven to be just as popular with the Posture Element added.

   One pupil stands at the head of the group with back to the group and counts ten. The group advances as the leader counts. The leader turns when she has counted ten, and sends any pupils back to the starting line that she sees moving. With Posture Element added the leader also sends any pupil back that has incorrect position of any segment of the body, as, "feet turned out," "protruding abdomen," "head forward," "hollow back," etc. This element adds a great deal of fun to the game and trains the leader (who may be each of the pupils in turn) in powers of observation and also trains the group to think quickly on stopping, in terms of a correct standing position.

   Value: Game emphasizes correct position of all segments of the body.

4. Slap Jack or Tap the Rabbit, with Posture Boards.

   The traditional game, Slap Jack or Tap the Rabbit, is played with the board on the head. If any pupil loses the board from the head it must be replaced before he can continue with his part in the game. To balance the board on the head throughout the game makes it impossible to hold the head in a poor position.

   Value: Game emphasizes correct position of the head.

5. Fruit Basket with Posture Boards.

   Rules as for Traditional Fruit Basket game. The boards must be kept in place on the head throughout the game. If the board falls off, pupil must replace board before he can continue with his part in the game.

   Value: Emphasizes correct position of the head (as above).

6. Exchange—With Posture Boards—Sitting or Standing.

   Pupils are numbered. They may be standing or "Cross Sitting" in rows, or sitting in seats. A teacher stands in front and calls two numbers ("16" and "24")—"16" and "24" must change places. Leader tries to get seat of one of the numbers. All must keep the boards on the head throughout the game.

Value: Game emphasizes correct position of the head (as above).

7. Walking, Three Deep, with Posture Boards.

   Rules—Traditional Three Deep—Walking instead of running. Posture boards must be kept on the head.

   Value: Emphasizes correct head position (as above).

8. Going to Jerusalem, with Posture Boards.

   The traditional game, Going to Jerusalem, is played with posture boards.

   Value: Game emphasizes correct position of the head (as above).

9. Statue.

   Traditional game—Playing Statue.

   Pupils are numbered 1 and 2. 1's twirl 2's—2's assume pose—a beautiful statue. Number 1's decide on the "most beautiful." The "Most Beautiful" must also have "Correct Posture." Then 2's twirl 1's and repeat.

   Value: Lies in having the pupils decide which of the statues have "Correct Posture."

10. Hang Tag.

    Traditional Hang Tag. Play in gymnasium or on the playground. Pupils should be instructed to "hang passively."

    Value: Value obtained from passive stretching of the spinal structures. (See Chapter XXIII, page 247.)

11. Indian Club Bowling with Soccer Ball.

    Bowling with soccer ball. Try to knock down Indian Clubs (3 to 9). One point scored for each club.

    Value: Value lies in type of activity. Bowling with a soccer ball is not too strenuous and active for handicapped boys and girls to participate in. The game is interesting for all ages, and for all groups—Regular, Restricted, Corrective, Nutrition, etc.

12. Bean-Bag Circle Toss—Bancroft, page 305.

    Players line up in front of a small circle drawn at a distance of from ten to twelve feet in front of each group. At a signal, each leader or captain toes the line with six bean-bags, aims for the circle, and throws one bean-bag after the other toward the circle. Each bag that lands in the circle counts one for the side throwing. A bag landing on the circumference of the circle does not count. As soon as the score has been counted by the teacher, the one throwing passes to the rear of his line, giving the bag to the second person in the line, who has moved up and is now toeing the line, etc.

    Value: See Values of Indian Club Bowling with Soccer Ball.

13. Stride Circle Ball.

    See "Games" by Jessie H. Bancroft. Page 358.

14. Bat Ball Modified.

Equipment: One Volley or Soccer Ball.

Played the same as "Bat Ball" except that the pupil making the run does not run, but walks. The ball is kicked at the runner instead of thrown.

Fielder may not kick twice in succession.

The inaccuracy of the kicks causes amusement, but also slows down the game. Never play to the point of great efficiency, for speed can be worked up as soon as that happens.

Value: Value lies in walking involved and in modifications made to slow down the speed.

15. Ball Throwing Game.

Equipment: Basket, Volley or Soccer Ball for each team. As many teams as desired.

There should not be too many in a team because it slows down the game and standing causes fatigue.

Pupils stand in circles and are numbered "One" and "Two." No. 1 on one side of the circle, and No. 2 on the opposite side, start the balls. Both balls travel in the same direction and one ball attempts to overtake the other. No. 1's throw to No. 1's and No. 2's throw to No. 2's. The ball which overtakes the other is the winner. See additional ball throwing games in "Games" by Bancroft.

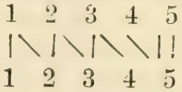
Value: Skills in throwing.

16. Zig Zag Ball.

Equipment: A ball for each team.

Each team consists of two rows of pupils facing each other with equal number on a side. As many teams as desired.

The ball is always thrown in this order:



That is, the ball must be returned to the player who started it.

The ball should be caught in both hands although thrown in different ways.

a. Throw with right hand.
b. Throw with left hand.
c. Turn back to team and roll ball between legs.
d. Turn back to team and throw ball over the head.
e. Facing partners, touch ball to floor and to top of head and throw.
f. Repeat with back to group.
g. Raise leg and stand with side to line of progress and with opposite hand throw ball under the leg.

Value: Skills in throwing.

For more Zig Zag games, see "Games" by Bancroft, page 419.

17. Cross Hustle Board and Ball.

Equipment: A Wand, a Posture Board and a Soccer or Basket Ball for each file.

The game is played in a cross formation consisting of four files radiating from the center outward.

A. The pupils face the center and the pupil in the front of each file is No. 1. No. 1 rolls the ball between the feet and between the knees of all the file to the end player. No. 1 then passes the posture board through the knees to the end player (or it may be placed on the head and recovered by the player just behind). The end player holds the board behind the back and kicks the ball around the circle and passes to the left and in front of own file, and starts the apparatus off again. The file whose players first make the race and return to their original position wins. In older classes where there are women with poor coördination and balance this seems to be an unsafe game, as they are apt to sit down hard as they kick.

B. A ball and a wand may be passed to the end girl and with the wand the ball may be tapped around the circle. (Like a hockey dribble.)

Value: Big Muscle Activity—Neuromuscular control.

Many other variations may be used in this formation. It is a social formation, as players in other teams may be watched. Ball Hustle may be played in this formation.

18. Drop the Board.

Equipment: A Posture Board for each pupil and one extra for each circle.

As many circles as desired.

Players stand in a circle with a posture board standing upright between their feet to insure a straight front foot position. Hands are clasped behind the back. The girl who is ''It'' stands outside the circle with her posture board on her head and the extra posture board in her hand.

The game is played like ''Drop the Handkerchief.'' ''It'' places her extra board in the hands of a player. The player tagged has to put the board on her head and clasp her hands behind her back before she may start in pursuit. If any player drops the board it must be replaced before resuming the chase.

Value: General Posture and Foot value.

19. Black and White.

Equipment: Posture boards for each pupil.

As many pupils as desired divided in equal numbers.

The game is played the same as Day and Night with the exception of the posture board on the head. This slows down the game somewhat, but adds an element of skill.

No one may run a step without the board on the head.

Value: Main value in game lies in lessened speed caused by addition of posture boards.

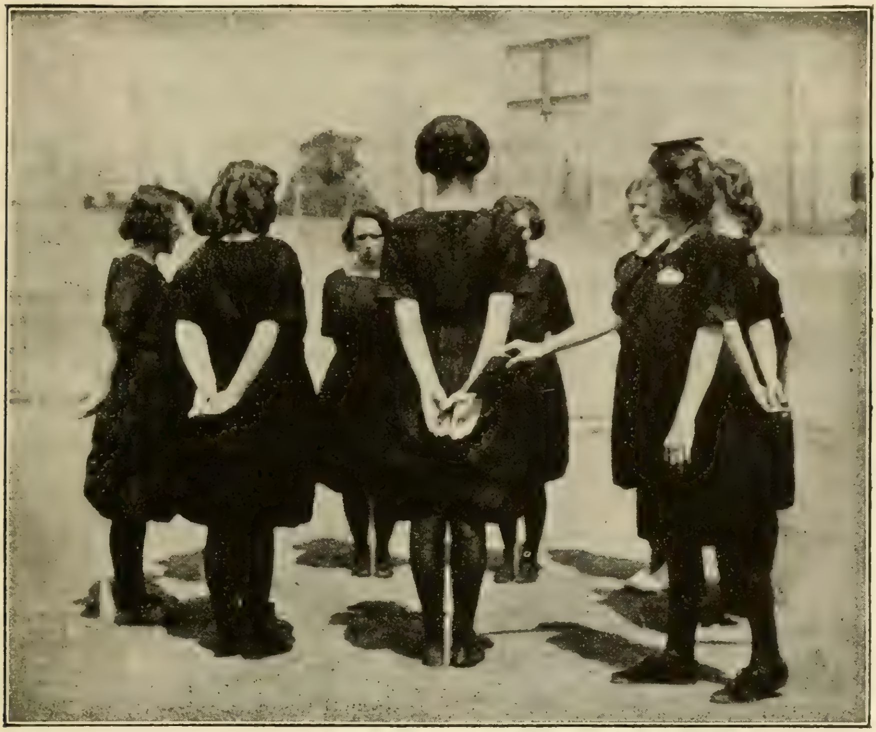


Figure 94

Drop the Board

20. Mental Arithmetic.

Equipment: Posture board for each player and printed numbers if desired.

As many teams as desired. A team consists of two rows of an equal number of players facing each other. The players are numbered consecutively from the front to the back. The players opposite each other bear the same number. There may be numbers on the boards or paper numbers in front of the player, or the player may remember the number received while "counting off."

The instructor calls "3 × 3" or "3 − 2" or "6 − 3" or any small combination. The players whose numbers answer the combination race to a designated spot. Two balance boards at the end of the rows make good goals because the pupil has to mount with the posture board still on the head and come to a good standing position before he may win.

The line earning 20 points first is the winner. If the board is dropped it must be replaced before running.

Value: Game emphasizes improved position of the head.

21. Ball Games on Back.

Equipment: Basket, Soccer or Volley Ball for each team. Mats if desired.

Each team consists of two rows facing each other. (These games will not do for pupils with pathological abdominal conditions. They may be fun on a rainy day, an upset schedule day, or as a lark. They would not be worth any expenditure of time.)

Players sit in two rows facing each other. No. 1 lies back on the mat and raises the legs diagonally upward at the same time she throws the ball between the legs to the player opposite. This player catches it while sitting up and then swings backwards and raises leg and throws it to the player diagonally opposite. Play to the end of the line and back. Zig Zag formation.

The second time played the player may swing back and raise separated knees to the chest. Player may try to place ball between feet and toss it to the player opposite.

Value: See above for this game (rainy day material).

Other variations may be made. Avoid quick "sit ups."

22. Mate Ball.

Equipment: A Volley, Basket or Soccer Ball for each circle. As many circles as desired.

Each circle is a double one with one player standing behind the other. The outside circles may be "Ones." The inside circles "Twos." The players may stand in circles drawn upon the floor, but this method slows down the game often because the ball gets out of bounds. The opponents standing in imaginary circles may move forward and backward the same distance as exists between players (double arm distance) in the circle. At a signal from the instructor the ball is tossed between two opponents and the one to catch it starts the game by throwing the ball in either direction to the next one of their team. If the ball makes the round trip of the circle the side on which it happens scores a point. If, however, the ball is intercepted by the other side, they in turn have a chance to make a round trip with the ball, starting with the player who caught it.

This game is a help in teaching Captain Ball because it trains the pupils to throw in sequences of circles.

23. Relays.

1. Stride Standing Position, Toeing In.

   Pass ball or Indian Club or Head Board over head. (May be played in Cross Sitting Position.)

   Value: Correct position of the feet. Stretching upward in passing ball overhead.

2. Stride Standing Position, Toeing In.

   Over and Under Relay.

   Pass ball or posture board, etc., over head and between knees.

   Value: Correct position of the feet. Big Muscle activity—alternate bending forward and stretching upward.

3. Shuttle Walk Relay with Posture Boards.

   Regular Shuttle Relay—walking. Keep boards on head.

   Value: Emphasizes correct position of the head.

4. Basket Ball Goal Relay.

   Stride Standing Position, Toeing In.

   Traditional Goal Relay. Pass Ball over head and try for basket.

   Walk throughout instead of running.

   Goal Relay interesting for all from ten years up.

   Value: Correct foot position. Stretching upward in passing ball over head.

   Corrective value: Walking instead of running.

5. Cross Sit and Cross Stand Relay.

   Cross Sitting Position. No. 1 assumes Standing Position with feet crossed, tags No. 2, who does the same, and so on down the line. When all are standing with feet crossed, the last one is seated (Cross Sitting Position) and tags the person in front of her, who resumes Cross Sitting Position, etc., until all are seated.

6. Torch Game Relay.

   Equipment: A pair of Indian Clubs and a Posture Board for each file.

   As many files as desired.

   One club is placed a short distance in front of the file to indicate the running distance for the file. The other club with the posture board balanced on top forms the torch.

   The torch is held in the right hand of No. 1 in each file. No. 1 holds it high enough so that he is forced to raise his head. He then walks as rapidly as possible around the club in front, and upon return passes the torch to No. 2. No. 1 then takes a place at the rear of the file. The game progresses with victory to the file who first has all the players back into their original places.

Upon playing the second game use the left hand.

Value: Improved position of head, neuromuscular control and skill without speed.

7. Ball and Wand Relay.

Equipment: As many wands and indoor baseballs as there are files. A pair of Indian Clubs for each file.

As many files as desired.

Stand the Indian Clubs some distance in front of the files and far enough apart to allow a baseball to pass through, but not too easily. No. 1 of each file hits the baseball and moves it forward in the manner of a hockey dribble to the right of the club and back between them. Upon his return No. 1 passes the wand to No. 2 and passes to the rear. The game continues until one line gets all the players back into their original places. The file which does this first is the winner.

*Variations:*

1. Place the wand diagonally behind back, R. hand at R. shoulder, L. hand at L. hip, and kick the ball around.
2. Standing back to clubs, push the ball with the wand between the legs.
3. Use clubs and bowling pins and bowl between clubs.

Value: Neuromuscular control; skill without speed.

8. Wand and Board Relay.

Equipment: As many Wands and Posture Boards as there are players. An Indian Club for each file (standing some distance in front of file for a goal).

As many files as desired.

With hands behind the back and posture board, book or bean-bag upon the head, No. 1 of each file races around the Indian Club. Upon returning tags No. 2. The game continues until one file is in its original position. The first file in place is winner.

A player dropping the posture board must either return to the file and replace it, or, if he has gone past the Club he must return to the Club.

Value: Emphasizes correct position of the head.

9. Over and Under.

Equipment: A Basket, Volley or Soccer Ball for each file.

As many files as desired.

The game is played like Ball Hustle with variation to make more throwing and less running.

The pupil in front of each file starts and passes the ball between the feet to the end player who runs forward with it. The whole file now faces right and the ball is passed to the right and in front of each player to the end player who does not run. The file faces right again and the end player passes it to the rear over the heads to the front player. The file now faces right and passes the ball to the left to the end player. The file faces left and the end player starts the ball back over the head. The next player passes it between the knees. They continue alternating. When the first player gets it he faces about as does the line. He starts again between the feet to the end player. This time the end player runs forward. Continue as in Ball Hustle.

Value: Maximum of interest with minimum of activity. (Used especially when class is tired.)

See variation in "Games" by Bancroft, page 392.

10. Inner Tube Relay.

Equipment: As many inflated inner tubes as there are files.

As many files as desired.

The player at the front of each file drops the inner tube over the head and steps out. The next, the same. Continue to the end of the file. The game is played like "Ball Hustle."

Value: Big Muscle Group—Body control.

III. Foot Games.

Standing.

1. Quiet Circle Foot Game.

Formation: Circle.

One pupil who is "It" stands in center of the circle. Pupil in center motions without speaking to child in circle. Pupil who is indicated tries to walk to center of the circle without being heard by the center child. The walking toward the center must be done correctly, feet facing straight forward with weight on the outer border. If the pupil in the center hears the sound of shoes or boards creaking, he motions the approaching child back and signals to another. If the child is successful in getting into the center without being heard, and walking in the correct position that child is "It" and goes to the center and signals to another child.

2. Circle Chalk or Marble Race for Two.

Pupils in circle formation, 10 players in circle facing center. Two pupils, A and B, face adjacent players in the circle. A piece of small chalk or a marble is placed in front of A and B. At a signal to start A (B does the same, going to L. in circle) picks up marble with toes and gives it to player he is facing in the circle. Circle player places marble on floor in front of him, picks it up with his toes and gives it back to A. A advances to right in circle facing the next player, places the marble on the floor in front of him, picks it up with his toes and gives it to next circle player, who places marble on floor in front of him, picks it up with toes and gives it back to A. A repeats, giving marble to all players in circle. B does the same, starting L. in circle. The one who gets back to the starting place first wins.

Pick out for A and B the pupils who need the exercise the most as they do the exercise 20 times in going around the circle while the circle players do the exercise only twice.

3. Pick Up Marble.
    1. Sometimes called the ''Inches Game'' (twelve to a foot).

       Equipment: Jack or marble for each pupil.

       Upon signal pick up marble with right foot and put into left hand twelve times. Then pick up with left foot twelve times and put into the right hand. The pupil finishing first wins.
    2. Equipment: Several marbles or jacks for each pupil.

       Attempts to pick up one, two or three jacks or marbles and so on. The winner is the player who can pick up the most at one time.
    3. Ring the Bell.

       Equipment: A glass or bell for the center of each circle. A marble for each pupil.

       Pupils stand in circle around the glass with ''Ones'' and ''Twos'' alternating. One at a time each player curls toes under, then releases the foot and snaps the marble toward the glass. Each player hitting the glass scores one for his side. Use right foot in one game and left foot in the next.
4. Circle Marble.

   Equipment: Two marbles or jacks for each circle. As many circles as desired, each having an equal number of ''Ones'' and ''Twos.''

   Each team is numbered off in ''Ones'' and ''Twos'' and two marbles are started at opposite sides of the circle, one by No. 1 and one by No. 2.

   The jack or marble is placed upon the floor in front of the leaders. Upon signal the marble is picked up by the leader with the right foot and passed to the next one of his number to the left. The next takes it in his hand and places it upon the floor and repeats the action. If the player is unable to grasp the marble he endeavors to do so while counting twenty-five and then picks it up in his hand and passes it to the next player to the left. The marble overtaking the other wins.

Play the second game with the left foot and move around the circle to the right. (As the foot is turned to release marble, note the additional foot action.)

5. Many Circle Marble.

Equipment: As many marbles or jacks as there are circles. As many circles of equal number as desired.

No. 1 of each circle places marble or jack on the floor. At a signal he picks it up with foot and passes it to the hand of the player at the immediate left. Each circle is numbered and the circle making the round trip first calls out the number of its circle. The circle winning the most games out of five wins. Change feet and direction each time. Instructor should by some subterfuge manage to get an equal number of games with right and left foot. For instance, have one practice game before the contest starts.

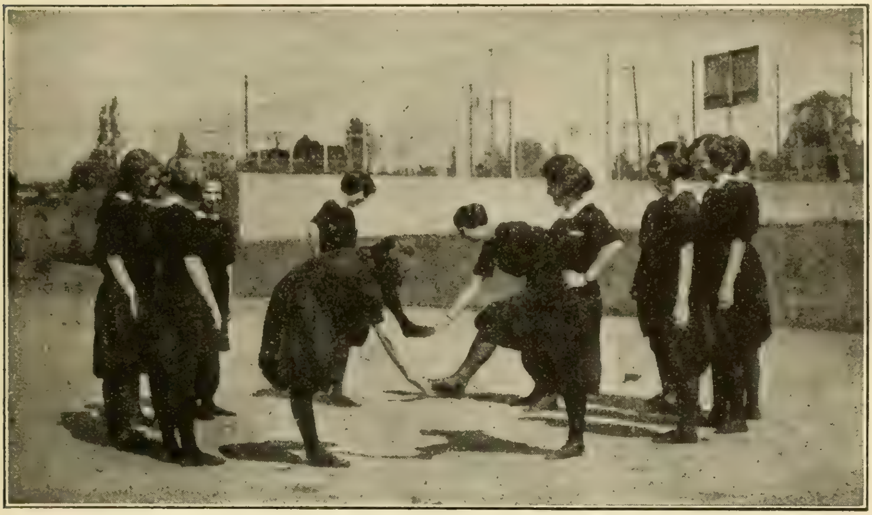


FIGURE 95

Circle Marble

6. Musical Marbles.

Played like "Going to Jerusalem." In a circle or several circles according to number of the class, place a jack or marble on the floor in front of all but one player. If a piano is available use it. If not, the pupils or instructor may sing. When the music stops each pupil tries to grasp a jack. The one who does not do so is "out." This pupils takes a marble with him and sits against the wall with knees drawn up and toes flexed until the game is finished. Play until there is only one player or until interest lags. Alternate direction of moving circle and the foot used in grasping the jack or marble.

7. Stride Sitting Circle Relay.

   Equipment: Posture board for each player.

   Players sit in circle with legs diagonally outstretched. All have posture boards on their heads and during the game rise with them and walk with them. No. 1 rises and "toeing in" walks between the legs of each player and between the players themselves as rapidly as possible. Upon returning to her place she sits and tags the player on the left. No. 2 rises and repeats. The circle having all their players in their original position first wins. At the end, as a treat, sometimes they may be allowed to leave off their posture boards and run in straight front foot position.

8. Zig Zag Marble.

   Equipment: As many jacks or marbles as there are teams. As many teams as desired.

   Played like Zig Zag ball games. Two rows facing each other play against any other two rows. No. 1 of each group passes the marble across to the girl opposite by means of her foot instead of throwing. Zig Zag Games—Bancroft, page 419.

9. Marble Hustle.

   Equipment: A jack or marble for each file and a box or preferably a glass cup (for the sake of the noise) in each file. As many files as desired.

   The players stand in the files with feet apart. The front player lightly kicks the jack or marble backward through their feet to the end player. The end player picks it up with the right foot and places it in a cup on a stool at the rear of the file. He then picks it out with his hand and, toeing in, runs forward to the front of the file and starts again. The file in place first wins.

   The second time the game is played, pick up the marble with the left foot.

Sitting.

1. Sitting Marble Relay (increase number of marbles up to 4-5-6).

   Sitting facing sideward on benches in two lines. Pass one marble to end of line and back, start two marbles, then three (up to 4 or 5) to end and back, going up with R., coming back with L. foot. The side that completes the passing for the three (or 4 or 5) marbles first, wins.

2. Sitting Marble Goal (or Jack) Throw Relay.

   Sitting facing sideward on two benches. Two lines drawn at end of room, 6 feet apart and 6 feet from end wall. Number one on each bench line picks up marble with toes from floor, tosses so that marble rolls to end of room. Pupils' sides are to the goal so that the tossing of the marble is done by swinging leg sideward.

Scores 1 point if marble passes first line.
Scores 2 points if marble passes second line.
Scores 3 points if marble hits end of room.

Line wins that get the largest number of points.

Lines may be closer to the benches and closer together. Teacher must judge distance that pupils are able to toss marble and draw lines far enough away and far enough apart to make the game interesting. Game may be played by two teams, each member tossing several marbles, keeping score on each toss as in quoits.

Game may be played by tossing marbles into circle a certain distance from the files.

Social Games.

1. Bean Porridge Hot.

   For directions see Exercises with Special Rhythms, Chapter XXVIII, page 415.

2. Tap Tap Partner, Tap Tap Neighbor with Feet.

   For directions see Exercises with Special Rhythms, Chapter XXVIII, page 416.

3. Foot Rotation to Yankee Doodle.

   For directions see Exercises with Special Rhythms, Chapter XXVIII, page 416.

4. Foot Exercises to Limericks.

   For directions see Exercises with Special Rhythms, Chapter XVIII, page 414.

5. Board Pass.

   Equipment: A Posture Board for each circle.

   As many circles with the same number of pupils as desired.

   All sit cross legged and facing center of circle. No. 1 passes board to the left and behind to No. 2. It continues around circle. The circle making the round trip first wins. Second game played to the left.

6. Train.

   Equipment: A Posture Board for each circle.

   Groups seated in several circles.

   In each circle the pupils right face and sit cross legged. No. 1 of each circle starts by placing the posture board upon head. No. 2 removes it and places it upon own head, and so on. The circle whose No. 1 regains his own board first after the round trip wins.

7. Thread the Needle.

   Equipment: A Posture Board for each circle.

   As many circles as desired.

Players sit cross legged in circle, the left leg is then half straightened in front allowing room enough for the posture board to pass under. No. 1 holds the posture board in right hand and passes it under left knee to left hand. Then takes it in right hand and passes it around to the back, passing right waist line first. Then regains it with left hand and with left hand passes it to the player on the left. The circle whose No. 1 regains her board after the round trip first wins.

The second time the game is played, the right knee should be used as the needle and the board started with the left hand and going around the circle to the right.

8. Jenkins Down.

Equipment: A marble for each two teams.

A team should consist of five or six players facing the same number of another team.

Groups are divided into two rows facing each other. All sit on the floor in Hook Sitting Position if they have the marble on their side and in Sitting Position if they are guessing. The side which has the marble passes it by means of their hands up and down the row behind their backs. Upon a signal from the opposite Captain, usually starting with the end player and changing each game, who calls ''Jenkins says marble down.'' Each player on the side having the marble pretends to have it and with both hands pretends to put it under both feet. As soon as this is done, the other side proceeds to guess. The Captain only may ask a player to put his foot down. If there are ten legs and seven have been called before the marble is found the guessing side has a score of three. Every time a player shows what is under his foot he leaves his leg straight out in front of him, and the score is counted by the knees still up. If any one but the Captain calls and is obeyed the player who shows his foot has to bend knee again so that it will count in the final score for the guessing side. The side scoring the most points with equal number of times holding the marble wins.

9. Tongue Depressor Exercises in Form of Games.

A. Individual.

1. Class sitting against wall.

   One leg crossed over the other while instructor counts sixty.

   Class tries to see how many times a tongue depressor may be grasped. Tongue depressor is given and taken away from the foot by the hand on the opposite side of the body. Tongue depressor is used lengthwise.

2. Class sitting against the wall or out into the room.
   Class seated with knees apart and ball of feet the distance of a tongue depressor apart.
   Each pupil grasps the end of the tongue depressor with the toes of one foot and attempts to take it into the other foot. Repeat as many times as possible while the instructor counts sixty. This exercise is done happily in series of circles around the room, making a social exercise.

B. Social Exercises.
   1. Class seated against wall in lines opposite each other or in circles.
      One leg is crossed over the other.
      The class is numbered "Ones" and "Twos."
      A snappy march or music with a definite rhythm is played.
      On the first measure No. 1's drop their tongue depressors on the floor with a click. On the second measure No. 2's drop their tongue depressors. The sound of dropping blades is pleasing and rhythmic and the whole selection is usually finished without fatigue.
      Repeat with opposite foot.
   2. Class seated in files, in circles around the room.
      Class divided in groups of twos seated side by side. The outside leg, or leg away from partner, is crossed over. No. 1 holds the tongue depressor with the toes of the foot crossed over. No. 2 removes it by hand and places it in foot. The attempt is made by each couple to win as a couple. The instructor counts sixty and as many exchanges are made as possible.
   3. Class is divided into groups of twos. Partners sit facing each other with legs straight in front of them. No. 1 places the tongue depressor in the right foot. No. 2 with right foot attempts to remove it. If he succeeds it is passed to No. 2's left foot. No. 1 with left foot takes it away and with right foot No. 1 takes it from his left foot. The round trip is now complete. There is difficulty in doing this at all and no race is suggested until a large majority of the class can perform the stunt. Then race in twos for speed.

Foot Game Stunts.

1. Jacks.

Equipment: Bounding ball and jack stones.

The player places a jack under the right foot and holds ball in right hand. As he bounds and catches the ball with right hand he picks up the jack with right foot and places it into left hand. He attempts to do this as many times as possible without error. Then with two jacks at a time. Repeat with left foot and with ball in left hand.

2. Jack Straws.

   Equipment: A pile of jack straws or tongue depressors.

   A hair pin is placed through the center of a tongue depressor and one end of it bent as a hook. The whole tongue depressor lengthwise is grasped by the toes. A pile of jack straws or tongue depressors are shaken into a pile on the floor. The pupil sits in a chair and keeps the heel on the floor while attempting to lift one straw or depressor at a time from the pile without jarring the remainder.

3. Cameron Baseball.

   Posture boards are used as bases. A marble is used by each batter and one by the pitcher. The pitcher flips the marble to the batter. The batter returns the flip and this represents batting the ball. Then he places his marble on the floor to represent himself. He flips marble to first base and the pitcher flips the ball to first base. If the pitcher's marble which represents the ball hits the posture board which marks Base 1, before the batter's ball which represents himself arrives, the first baseman may pick up the pitcher's marble with toes and with the foot holding it, tag the batter. With each batter having a marble to represent himself, proceed as in baseball.

4. Cynthia's Croquet.

   Make croquet set of spools and wires. Play croquet by shooting marbles with the feet.

5. Tug-of-War.

   A. Seat two pupils in chairs facing each other. On the floor, which must be smooth, place a long narrow strip of some rough material with a knot tied in the middle. Each player places heel (using one foot at a time) on the floor and grasps the material with toes. Each tries to gather up more and more material under toes. When it gets too much player may move heel along. The player reaching the knot first wins.

   B. When the players nearly reach the knot they may have a tug-of-war, each trying to get the knot under foot. Do with both right and left foot.

6. Writing.

   Equipment: A piece of paper and pencil for each pupil.

   Pupil sits on a stool, holds the paper with left foot, toeing in, and holds the pencil upright between his toe and second toe. Tries to write.

IV. Tilted Balance Board Games.

1. Board Hustle.

Equipment: As many tilted balance boards as desired. Three posture boards for each balance board.

Four or five pupils standing on each balance board.

At signal, No. 1 on each board places a posture board upon head and then hands upon hips. No. 2 removes it and places it upon own head. So on until the end player has it upon head. End player then dismounts and walks forward and remounts in front. The game continues as in "Ball Hustle."

The second game, pass two boards back, one at a time, and the third game play with three boards. The end players must walk forward with as many boards upon head as have been passed.

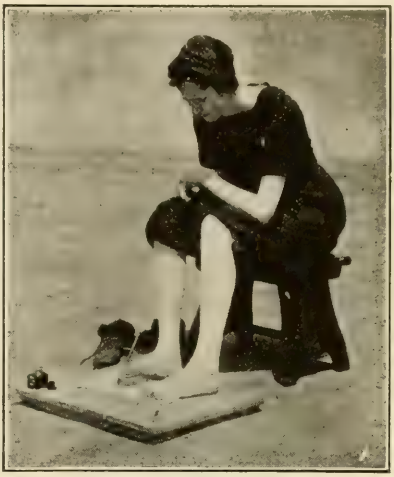


FIGURE 96
Writing with Toes

2. I Say "Stoop." (Adapted from Bancroft.)[1]

Equipment: As many tilted balance boards as desired.

As many players as desired.

A posture board for each player.

The game is a variation of the old familiar game "Simon Says" but calls for much more activity than the latter game.

The players are equally distributed upon the boards as desired and in front of them the leader or instructor. Each player has a posture board on head. The teacher says quickly, "I say, Stoop!" and immediately stoops himself and rises again, somewhat as in a courtesy. The players all imitate the action; but when the leader says, "I say, stand!" at the same time stooping himself, the players should remain standing. Any who make a mistake and stoop when the leader says, "I say, stand!" are out of the game.

3. I'm So Very Very Tall. (Adapted from Supplement to Manual of Physical Education, State Board of Education, California, 1918, page 34.)

Equipment: As many tilted balance boards as desired.

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[1] See "Games," Bancroft, p. 113.

As many players as desired.
A posture board for each player.

I'm very, very tall,
Or I'm very, very small,
Sometimes tall, sometimes small,
Guess which I am now!

The pupils are on the boards with one pupil between the boards who covers eyes. Some one on the boards is chosen to tell them which they are to be—tall or small—at the end of the game. As they sing, "I'm very, very tall," they stretch up as high as ever they can. When singing, "I'm very, very small," they make themselves as tiny as possible. They stretch up again as they sing slowly—"Sometimes tall" and down with "Sometimes small." After a very short pause while the one named at the beginning of the game gives the signal for them all to be either tall or small, they sing quickly, "Guess which I am now!"

For very little children it is better to change those having the principal parts each time the game is played.

4. Shoe Pass.

Equipment: As many tilted balance boards as desired.

As many players equally distributed upon the boards as desired.

No. 1 on each file upon signal removes right gymnasium shoe and passes it over head to the end of the line. The end player dismounts and brings it forward and stands while No. 1 puts it on again. As soon as this is done the end player, now in front, mounts the balance board and removes shoe. The game ends when all have removed and replaced shoes. Use left shoe for the second race.

5. Board and Jack Relay.

Equipment: As many tilted balance boards as desired.

As many players equally distributed upon them as desired.

Players remove shoes. Each player should have a posture board and a jack. The posture board is placed at the left of the tilted balance board at some distance. The jack is placed on the floor at the right and close to the balance board.

At the signal No. 1 of each file picks up the marble with the right foot and receives it in the left hand. As soon as it is in the left hand, the hand is raised and the player calls No. 1 and so on. When the end player has called his number, all the players on the board step off quickly and place their jack where their posture board was and remount tilted board and stand at attention with posture boards on their heads. The file first completing this wins.

6. Sailor's Hornpipe.

Equipment: As many tilted balance boards as desired.

As many pupils as desired.

Two posture boards for each pupil.

Sailor's Hornpipe might be classified as a dance, but, inasmuch as it is one of the activities for diversion upon the balance boards, it is classified as a game.

The two posture boards in the hands.

1. Raise left leg backward and place back of left hand holding board on the hip. Raise right arm up holding the other board as if sighting a ship, 1—2. Replace, 3—4. Other side, 5—6—7—8.

   Continue 16 counts, then repeat and stamp, 13—14—15—16.
2. With a board in each hand, bend forward and touch incline boards, 1—2. Return to upright, 3—4, and place one board on abdomen and retract muscles. Place other on back and attempt to flatten back. Quickly change the front to back and back to front, 5—6—7—8. Continue for 16 counts and repeat 16.
3. Similar to arms akimbo, touch boards in front and hold elbows out shoulder high. Move backward across the boards, kicking one leg then the other (1—2, kick; 3—4, replace) and at 16, repeat 16.

# CHAPTER XXX

## DANCES, DANCING GAMES, DRAMATIZED MOVEMENTS AND PANTOMIME

### Introductory Notes

Probably there is not a more natural mode of expression as an outlet to a child's imagination and emotions than dancing, especially of the informal, more or less spontaneous type. Because free, large muscle movements predominate in this type of activity, it is of great value in relaxing nerve and muscle tensions. In consequence, there is very little coördinative strain and fatigue is reduced to the minimum for a given period.

The less vigorous types of dances, when excitement does not rise to too great height, are valuable, provided there is no exaggeration of detail, like toe pointing outward, hard stamping or exaggerated bending. At a certain awkward age, and for the sluggish, slow-acting types, rhythmic activities are of especial value in developing the neuromuscular paths, in the sense of improving the expression mechanism, without any thought of the purely muscular aspects.

In the social dances, because of the continuity of the movement, and the smoother rhythm, the waltz of the older type—legato in tempo and with three equal notes in a measure—is preferable for the overacting types and cultivates better control and grace of movement than the more rapid fox trot and one step.

The question of shoes is an important one, for an hour's dancing in faulty pumps with round ball, narrow toe, and slender heels, can more than offset the corrective results from several hours of foot and leg work in the gymnasium. This would be true to a great extent in ballet dancing, because of the exaggerated foot and leg positions and the type of shoe worn. Dancing fills an important place, however, and must often be used for its good values with a disregard of some of the less desirable features.

It should be well recognized that movements with a definite dramatic meaning are far more interesting than the performance of formal exercises as such, even when the student understands the purpose of the latter. The imagination is stirred more when the whole body, or any of its parts, are used for some form of expression, as evidenced by the spontaneous dramatization constantly carried on in the play activities of children.

We are suggesting that certain movements representing dramatized action be formulated for the double value of satisfying this normal desire in the pupils, and at the same time building up their motor control. For instance, children love to "play statue," and we find that assuming poses, such as the "Flying Mercury," or "Pursuit and Flight" with the tilted balance board as a foundation for its corrective value, has proven exceptionally valuable.

The development of the pantomime has also the same value when limited in the scope of motor activity.

Minuets and pantomimic dances of dignity and beauty have a valuable place in the corrective program for restricted groups. Minuets are ideal for corrective classes as they inspire beauty of posture. Too much of this type of work soon palls upon those of adolescent age, however.

Melvin Gilbert in his "School Dances," Vols. I and II, has many dances suitable for use.

"Cinderella" is a slow form of the Portland Fancy.

"How Do You Do?" is greatly enjoyed but must be watched carefully and not danced too long.

"Dainty Steps"—Touch heel forward instead of "point toe."

"Pop Goes the Weasel"—Light skipping steps, toeing forward.

The Rye Waltz in the "Ford Collection of Country Dances" may be used, and also some of the square dances if not danced too long.

Miss Burchenal's book, "Folk Dances from Old Homelands," offers many dances that are applicable to corrective groups—"Half Moon," "Little Man in a Fix," "The Hatter," "Vineyard Frolic," "Turn Round Me," and "Come, Let Us Be Joyful." All running should be done in a straight front foot position.

"The Hatter"—Skipping (feet toeing forward), buzz step (running sideward), feet toeing forward (adapt action to ability of group).

"Vineyard Frolic"—Skipping, toeing forward. Running, toeing forward. Pantomime.

"Turn Round Me"—Light running steps, toeing forward.

"Come, Let Us Be Joyful"—Walking, toeing forward. Light skipping.

"Gathering Peascods," music in Sharpe's "Country Dances" and "Slovak" from Chalif are applicable for corrective groups.

"Gathering Peascods"—Light running steps throughout, feet toeing forward.

"Slovak"—Running and schottische steps throughout. Light running steps.

The Marion Morgan type of dancing is excellent because of its straight front foot position and inward circles for the feet.

Individual and group dramatization of fine music is a field not yet touched in corrective work. This type of work has unlimtied possibilities.

Miss H'Doubler in "The Dance" offers many exercises of beauty which are of great value physically and psychologically.

Some of the simple clogs in which there is no jumping in Miss Frost's Clog Dance Book—"Clog and Character Dances"—have been used and are applicable to corrective groups.

FIGURE 97
The Beauty of the Dance

## DANCES

1. Waltz Dance.
   Waltz Tempo.
   1. Couple Dance. Join inside hands. Starting with outside foot waltz balance forward one measure; inside foot, one measure, outside foot, one measure. Step backward inside in waltz balance, one measure. Repeat all.
   2. Face each other and bear the weight on outside foot. Cross inside foot behind and make scant courtesy, one measure. Step on inside foot and cross outside behind and courtesy, one measure.
   3. Waltz outward two measures and face partner again—Two measures.
   4. Join left hands and moving to the right of partner, waltz four waltz balance steps around each other—Four measures.
   5. Repeat dance.

      In all dances the outside foot or hand shall mean the one away from partner. The outside dancer shall be the one nearer the wall.

2. Eight Step March.

This was original with Jennie Blanche Wilson, former woman director at Sargent Normal School of Physical Education.

Music—6-8 march.

Couples start in twos with inside hands joined.

1. The outside dancer walks forward and around inside dancer. Eight steps, starting with outside foot.
2. Both walk eight steps forward.
3. Inside dancer walks around outside dancer, eight steps.
4. Both walk eight steps forward.
5. Partners face each other and join right hands. Walk forward and to the left of partner, eight steps.
6. Both walk forward, eight steps.
7. Face each other again and join left hands. Walk forward and to the right of partner eight steps.
8. Both walk eight steps forward.

   (Sometimes this figure is added here.) The inside dancer kneels and the outside dancer walks around him, eight steps, and then both walk eight steps forward. Outside dancer kneels and inside dancer walks around, eight steps. Both walk eight steps forward.
9. Working in sets of fours.

   With right hands joined across walk to left around in a wheel eight steps.
10. All walk eight steps forward.
11. With left hands crossed walk to right around wheel, eight steps. All walk eight steps forward.

    Repeat this dance by doing four polka steps instead of eight walking steps. Instead of walking forward, polka away from partner, toward partner, away from partner, and toward partner.

3. Heel and Toe Polka—Couple Dance.

I. Music—"Cuddle up Closer" from "Three Twins."

Couple Dance.

Couples join inside hands.

Starting with the outside foot, touch step forward and back as in heel-toe polka. Heel-toe polka twice with outside foot and twice with inside foot.

2. Step on the outside foot and half turn toward partner—One!

   Point inside foot—Two!

   Step on inside foot and turn outward—Three!

   Point outside foot—Four!
3. Starting with outside foot, walk half sideward and half facing partner, away from partner three steps—1-2-3. Place the foot on the fourth count behind and courtesy slowly—4.

4. Starting with the outside foot, skip toward partner, two steps and two steps in the line of direction—1-2-3-4.

4. The Duchess.

Three Step "Rubies and Pearls."

This is an old ball room dance but because of the minuet-like qualities it is suitable for the Corrective Class.

It may be done in two ways, by going forward and turning, or in backing. The turning seems to be more complicated and not so easily mastered but in its day the "Genteel People" turned.

In couples.

1. Starting with the outside foot walk forward three steps and touch step forward with the inside foot.
2. Walk backward three steps with the inside foot starting and pointing the outside foot on four.
3. Face partner and slide three steps and turn and three more steps and turn and repeat dance.

If turning.

Starting with outside foot walk three steps forward and point inside foot. Swing inside foot inward and start walking upon it in the opposite direction.

The inside foot points on four and the inside leg has to be swung to the front before executing the three slide steps.

The regular ball room position may be used for the slides and turns if desired but to make the dance a strictly class affair, both arms are extended sideward shoulder high and palm to palm.

5. Lonesome Club.

Named for the place where old time dances are still danced and where it was discovered.

Music unknown—Rustic Country Dance Music will do.

Couples starting with outside foot walk three steps forward and point inside foot on fourth—1-2-3-4.

Start walking backward with inside foot, three steps and point on four—1-2-3-4.

Step on outside foot and swing left across, 1-2. Step on inside foot and swing outside across, 3-4. Repeat swings. Repeat the whole and execute four two step turns in dancing position or with arms outstretched and palms together.

6. Chicken and Rooster Dance.

Costume: Hat, sleeves and tail made of newspapers, red cardboard comb inserted in head piece. Rooster's legs wound in yellow crepe paper.

Chickens enter in twos to tune of "Tale of a Kangaroo" (any music suitable for heel-toe polka may be used) and separating right and left to form two circles.

1. Arms upward bend. Toe out.
2. Turn hands outward. Toe in.

3. Three change steps forward toeing in and flapping hands up and down.

When chickens are in place, roosters appear. A tall one enters first, obscuring the bantam behind.

Meanwhile—

Chickens scratch the ground 1-2 (toeing in); 3-4 (with hands on hips bend forward for worm)—5-6. Return.

Roosters go each way inspecting hens. Raise knees high, toeing in. Roosters come to front and have argument with heads thrusting forward, shoulders shrugging and many hops. Chickens meanwhile move to the rear and out of the circle and down in twos. Rotate feet outward twice—run three steps forward, meanwhile flapping wings. One of each couple has a bit of string concealed in her pocket and as roosters are in front to cover, the string is put in the mouth of each. It is now a worm and is pulled back and forth with head exercise for the chest. (Turkey gobbler exercise.) The roosters separate and go to rear. On the last measure of the strain the left chicken grabs the worm and runs left, his partner following. They go to roost on the balance boards. Little bantam rooster does, also. Big rooster crows and elbows him off and takes his place. Bantam crows shrilly and goes off mad and curtain is lowered.

## DRAMATIC PANTOMIME

Statues—Groups—Sixth Grade through High School.
Music, "Minute Waltz" .................. Chopin.

(16 measures of music for each pose. Change each time is made on the 16th measure, counting one count to each measure.)

1. *Crouch Start for Running.*

   Kneeling on R. knee—tips of fingers on floor just in front of L. toe, about 12 inches apart, thumbs toward center—R. knee opposite L. instep—good chest expansion, with head up.

   Note: Emphasize head up, and arms far enough apart to prevent rounding upper back. Knee under chest prevents hollow back.

2. *Tennis Serve.*

   On count 16, stand, turn body to R., stride position facing R., feet toeing forward. R. arm shoulder high bent at elbow holding tennis racquet. Head thrown well back facing court. L. arm extended forward, holding ball.

   Note: Emphasize arm positions—shoulder high. Both arms are rotated outward, and are shoulder high, securing maximum stretch of chest muscles, feet toeing forward, weight equally divided.

3. *Queen of May—with Train.*

   On count 16, step forward R., both feet toeing forward. Weight on R. foot, knees touching, heel of left foot raised. Twist trunk to R., holding train in rear and look over R. shoulder at train. Head (high and haughty as queen). Keep hips facing forward.

   NOTE: Emphasize chest and head position, twisting upper part of body, keeping back flat, and hips to front, feet toeing forward, weight on forward foot, R.

4. *Queen of May—Accepting May Baskets.*

   On count 16, step forward L., weight on L. foot, knees touching. Heel of R. foot raised. Turn body forward, L. arm extended, to receive children and baskets. R. hand placed on head of child. Lean forward from hips and a little to L. Head back and tilted slightly to L.

   NOTE: Emphasize lean forward from hips, flattening lower back. Emphasize the correct head position, head well back, feet toeing forward, weight on forward foot.

5. *Picking Fruit.*

   On count 16, bring R. foot to L. Hold basket for fruit in L. hand about shoulder height. Reach upward with R. hand for fruit and look at the basket.

   NOTE: Emphasize head position, L. arm shoulder high, R. stretched upward. Contract abdominal muscles and flatten back.

6. *Admiring Grapes—Held High* (Marion Morgan Series).

   On count 16, place R. foot forward, toeing forward, arms high holding fruit, L. arm higher, standing on balls of feet with head high and thrown well back, looking at grapes.

   NOTE: Emphasize head back. Contract abdomen, flatten lower back. Feet toeing forward in forward stride to give wider base for balance. L. hand stretched higher as R. arm was higher in preceding exercise.

7. *Gathering Poppies.*

   On count 16 kneel on R. knee, R. foot resting in inversion, L. knee bent at a right angle, L. foot toeing forward. Hold basket in L. arm, pick flowers with R., leaning somewhat forward to the R., looking at flower in R. hand.

   NOTE: Trunk leaning from broad base. Emphasize leaning from hips (no bend in the waist). Feet in corrected position.

8. *Looking at Reflection in Stream.*

   On count 16, standing position, toeing forward, hands at side of forehead, palms down, elbows well back, wrists straight.

   NOTE: Emphasize pull shoulder blades together, and hold shoulder blade position.

9. *Pierrot.*

   On count 16, large step forward with L. foot, bend L. knee, both feet toeing forward. R. arm upward, L. arm backward, complete arm extension, pointing index finger. Look at R. hand, R. heel may be raised.

Note: Emphasize feet toeing forward—body in straight line with rear leg—get maximum stretch of chest muscles by complete arm extension.

10. *Pierrot.*

On count 16, place the weight on R. foot. Raise L. knee bent at R. angles, toes pointed down. Arms in circle over head, index fingers touching.

Note: Balance element on R. foot. L. Knee bent at R. angle to prevent hollow back with arms overhead. R. foot toeing forward, L. foot may rest on R. knee, thus helping to secure external rotation of R. thigh. (See Exercise 13 for balance on L. foot.)

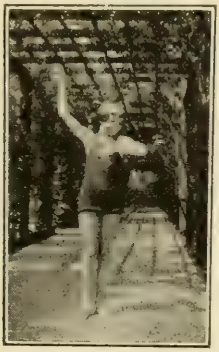

Figure 98

Picking Fruit

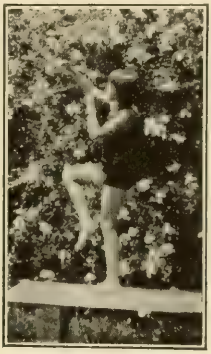

Figure 99

Wood Nymph

11. *Good Fairy.*

On count 16, standing feet together, toeing forward, arms extended forward upward as if in supplication—palms up—head well back.

Note: Emphasize contract abdominal muscles, flat back, correct head position.

12. *Statue.*

On count 16, weight on L. foot, R. foot back, knees touching, standing on balls of feet, feet toeing forward, L. hand resting lightly on head, R. arm on chest.

Note: Emphasize push head up against hand, abdominal muscles contracted, back flat.

13. *Wood Nymph* (No. 1).

On count 16 place weight on L. foot, place R. heel on L. knee, R. knee turned out, trunk erect, head up, holding pipes to mouth with L. hand close to mouth.

NOTE: Emphasize head up, back flat, L. foot toeing forward, R. foot resting on L. knee, thus help to secure external rotation of L. thigh. (See Exercise 10, for balance on R. foot.)

14. *Wood Nymph* (No. 2).

On count 16, step backward R., stand on balls of feet, toeing forward, knees bent slightly, weight evenly divided, turn trunk L., turn head to rear, body inclined toward front of room, head to rear, hands holding pipes, L. arm leading and extended to rear, R. hand close to mouth.

NOTE: Balance hazard increased by twisting trunk to L. with the L. foot forward. Emphasize head position, abdominal muscles contracted, back flat.

15. *Courtsey.*

On count 16, face front, place weight on L. foot. Cross R. foot in back, touching toe. Bend both knees. Body erect, hands hold skirts at sides.

NOTE: Slight knee bending, holding erect position of body.

16. *Courtsey—Right.*

On count 16, place weight on R. foot. Cross L. foot in back, touching toes. Bend both knees. Body erect. Hands hold skirts at sides.

NOTE: Slight knee bending, holding erect position of the body.

17. *Circle.*

On count 16, turn toward partner. Take both partner's hands —arms fully extended—pulling back. Lean away from partner, body in straight line from head to toe, head well back.

NOTE: Emphasize pinch shoulder blades together and hold shoulder blade position throughout the exercise. In holding body in a straight line leaning away from partner, keep abdominal muscles contracted and back flat.

18. *Kneeling.*

On count 16, cross hand, L. hand on top with partner—girl on L. kneels on R. knee, left hand above head, joined to partner's L. hand, R. hands are joined in front of standing partner's body. Partners look at each other.

NOTE: Emphasize correct alignment of head, trunk and hips.

# CHAPTER XXXI

## ADDITIONAL HELPS AND SUGGESTIONS

### I. Good Posture Week.

### PLAN FOR ELEMENTARY SCHOOLS

*Tags:*

Distribution of "Good Posture" tags each day throughout the week with a blue tag on Friday for pupils retaining the white tag the entire week. Tags may be 3″×1″ with "Good Posture printed across the tag.

Good Posture Week organized according to the following:

*Aims:*

To arouse interest in Better Posture for all.

To give definite instructions in Good Posture daily for one week.

To keep the idea of correct posture in the minds of boys and girls for five consecutive days throughout the entire day, and during all phases of the school program.

*Plans:*

1. Each morning during the week to call attention to correct posture, standing, sitting, walking. (See Chapter III, pages 31-34. References: Clark, "Physical Training," pages 8-14; Supplement to Manual in Physical Education, State Board of Education, California, 1918, pages 86-89.)
2. To give a Good Posture tag to each boy and girl each morning throughout the week.
3. Boys and Girls will keep Good Posture tags as long as Good Posture is maintained. Have pupils drop tags in box as they pass out each day.
4. Teachers take Good Posture tags when faulty posture is assumed in sitting, standing or walking. Credit should be given for effort made. Spirit should be that conscious effort should be recognized. Tags should be taken for outstanding carelessness and indifference.
5. Teacher records name of pupil when Good Posture tag is surrendered.

6. Score is kept by student monitors, who collect lists of names daily throughout the week, file lists and score first, second and third place. Boys and girls securing first place will win blue tags on Friday.

MONDAY—Correct Sitting, Standing and Walking Positions.
  See Chapter III, pages 31-34.
  See Posture Cues, Chapter XIX, page 210.

TUESDAY—Correct Posture Dependent upon Food, Rest, Exercise, Play.

"There was a man in our town
He was a doctor wise,
Who wanted folks to keep quite well,
And so he did advise—
Fresh air, good food, and lots of sleep,
With merry times each day;
And all the folks who followed him
Were happy, well and gay."

—E. WATSON.

"Jack Sprat was strong and fat,
For he drank milk and cream,
Ate vegetables and lots of bread,
And left his plate quite clean."

—E. WATSON.

WEDNESDAY—Personality—Its Relation to Correct Posture.

1. Personal appearance—clothing and shoes.
2. Grace, poise, beauty.
3. Strength and endurance.

THURSDAY—Good Posture as seen in
  Nature—grandeur and stateliness of tall pines.
  Art—Sculpture—Statue of Liberty.

FRIDAY—Correct Form in Athletics develops Good Posture.

### PLAN FOR JUNIOR AND SENIOR HIGH SCHOOLS

*Tags:*

Tags in the form of pennants are recommended for girls and boys in Junior and Senior High Schools.

*Plan:*

The Good Posture Tags are given out in the Home or Classrooms. The name and Classroom of student are written on the back of the tag. When the student loses the tag it is returned to the Home or Classroom Teacher to be given out the next day.

The same general plan is carried out as in the elementary schools. Lectures on Good Posture are given in the Home or Class Rooms of the students. It is taken for granted that the student attempts to assume Good Posture the first thing in the morning or during his Home Room period. At this time each student is given a Good Posture Tag. The week is characterized by constructive effort to maintain correct posture.

If the student does not make an honest effort to keep Good Posture throughout the day he loses his tag for that day. Any teacher (or monitor appointed) can take the tags for poor posture. The next morning all start again with Good Posture and Good Posture Tags. Those who keep the tags all week receive a blue pennant at the end of the week. Second and third places should be given recognition in some way (names may be printed on board—merits given), so that the students who lose the tag the first day will not lose interest.

The success of Good Posture Week depends upon the interest and enthusiasm of the principal and faculty in capitalizing a device to stimulate better Posture. In many schools principals and teachers wore the tags and held themselves to an attempt to maintain correct posture at all times.

*Methods Used to Carry Out Plan:*

1. Talks on Good Posture by Squad Leaders in Home Rooms.
2. Assembly programs with lecture on Posture in relation to Health or kindred subjects by an outstanding authority in the community.
3. Good Posture Film, by Armour Klein, M.D.—Put out by Children's Bureau, United States Department of Labor.
4. Coöperation of Other Departments (see Good Posture Week, Chapter I, page 27).
    a. Home Economics Department—Discussion or Assignment relating subject matter to Posture: Clothing and Posture—Food and Posture.
    b. Science Department—Discussion or Assignment: Nutrition and Posture—Physiological Benefits of Good Posture.
    c. School Paper—Cuts and articles on subjects related to Posture and Health.
    d. Art Department—Posters.
    e. Physical Education Department—Emphasize Triple Posture Test (see Chapter XIX, page 213). Emphasize Posture in Rhythmical—Apparatus—All Phases of Activity.

II. Suggested Topics for Posters—Art Department—For Good Posture Week.

Correct Posture—Related to and Depends upon:

A. Activity.
  1. Exercises.

|  |  |
|---|---|
| a. Good form or | a. Poor form. |
| b. Right type of execution. | b. Poor execution. |
| 1. Correct balance. | 1. Incorrect balance. |
| 2. Control. | 2. Poor control. |
| 3. Poise. | 3. Lack of poise. |
| 4. Strength. | 4. Weakness. |
| 5. Endurance. | 5. Fatigue. |
| 6. Ability. | 6. Arkwardness. |

  2. Play—Develops and requires correct balance, control, poise, strength, endurance and agility.
    Swimming: Can you swim with poor muscular control?
      Can you swim with weak muscles?
    Tennis: Can you play tennis with poor muscular control?
      Can you play tennis without endurance?
    Hiking: Can you hike with poor muscular control?
      Can you hike without agility?
    Athletics: Can you "make a goal" with poor muscular control?
      Can you "make a goal" without poise?
    Dancing: Can you dance with poor muscular control?
      Can you dance with incorrect balance?

B. Health Habits.
  1. Training rules for boys and girls.
    a. Three meals a day.
    b. Nine hours of sleep each night.
    c. Six glasses of water daily.
    d. Clean teeth twice daily.
    e. No candy between meals.
    f. Sleep with windows open.
    g. Bathe daily.
    h. Eat slowly.
  2. Sleeping.
    a. Regular hours.
    b. Rest in afternoon.
    c. Correct lying position.
  3. Daily hygiene.
    a. Clean face and hands.
    b. Clean teeth twice daily.
    c. Bathe daily.
    d. Clean clothing.
    e. Correct standing position.
    f. Correct sitting position.
    g. Habits of exercise, play and rest.

4. Eating.
    a. Regularity of meals.
    b. Three meals a day.
        Mid-morning lunch.
        Fruit between meals.
    c. Eat slowly.
    d. Balanced meals.

C. Personality.

1. Personal appearance.
    1. Clothing—suitability—correct size—color, etc.
    2. Correct shoes.

2. Beauty, grace.
    1. Beautiful lines in clothing.
    2. Beauty in wholesome and joyous physical expression.
    3. Beauty in well groomed appearance.
    4. Economic advantage: for profession; music; lectures.

3. Strength and endurance.
    1. Citizenship improved.
    2. Better athlete.
    3. Economic advantage: for profession; lawyer; business.

Good Posture as seen in:

1. Nature—Grandeur and stateliness of tall pines.
2. Art—sculpture—Winged Victory, Statue of Liberty, Greek Gods and Goddesses.
3. Great Men:
    Theodore Roosevelt.
    Benjamin Franklin.

III. Distribution of "Grade A" Posture Tags to Motivate Triple Posture Test and to Stimulate Good Posture in Elementary Schools.

It is recommended as a concrete means of recognizing an effort to maintain correct posture that "Grade A" Posture Tags (Tag 3″×1″ with "Grade A" Posture printed across it) be awarded twice throughout the year to those who pass the Triple Posture Test. (See Triple Posture Test, Chapter XIX, page 213.)

The suggestion is made that "Grade A" Posture Tags be distributed as a preliminary to Good Posture Week and as a follow up, two months before and two months after Good Posture Week. At the time of the first test about thirty-five per cent of the boys and girls should receive posture tags. The second test the teachers should be more liberal, so that seventy to eighty per cent may receive tags.

### IV. The Golden Goose of Good Posture—Dramatization of Correct Posture. Grades I-VI.

The Story of the Golden Goose of Good Posture is used to illustrate Correct Posture. The dramatization may be used as an assembly program, or as an illustration for a daily lesson in physical education for Grades 1-6. Ten or twelve boys and girls with excellent postures should be chosen to dramatize the story. The teacher gives a brief outline of the story of the "Princess Who Never Laughed," by Peter C. Asbjornsen. The story goes that the youngest son of the wood-cutter, who shares his cake with the little old man in the wood, found as his reward at the roots of the tree that he had chopped down, a goose with feathers of pure gold. The story tells how the innkeeper's daughters wanted the Golden Goose, and how the oldest daughter tried to take the Golden Goose as the youngest son of the wood-cutter slept. But lo, her fingers were fastened to the Golden Goose. In turn her two sisters were attached. The boy started home with his Golden Goose and the sisters had to follow. Two lads tried to get the sisters away and they were held fast. Soon the boy had a long train of people following him because their hands were fastened together. Not any of them could get away.—The children always know the story of the princess who could not be made to laugh—The king had promised her hand in marriage to any one who could make her laugh. When the boy with the Golden Goose and his long train of followers, who could not get away, passed by under the window, she laughed and laughed! And the boy married the princess and lived happily ever afterwards! Now the teacher tells the story of her Golden Goose:

As I was coming to school this morning, I noticed that in my arms I had a Golden Goose. On the corner I met Elizabeth. Elizabeth called to me and said that she would like to come to the Roosevelt School with me. I looked at Elizabeth very carefully. I saw that Elizabeth had a very poor head position. I said, "No, Elizabeth, you have poor posture. All of the children at the Roosevelt School have Good Posture. There is no room for boys and girls with poor posture at the Roosevelt School." I tried to hurry away so that Elizabeth could not come with me. Elizabeth turned, too, and took hold of my hand. When Elizabeth took my hand I found I could not get away. Elizabeth was, and is, fastened to me by an unknown power. Elizabeth, as she stands by my side, exaggerates a "Forward Head" position. I pulled hard, but the harder I pulled the tighter Elizabeth held on, and here she is! I looked at the Golden Goose in my arm and I recalled the story. I could not get away because of the Golden Goose.

In turn I met:

John with Round Shoulders.

Mary with Round Back.

Allen with generally relaxed posture, Head Forward, Round Shoulders and Hollow Back.

Dorothy with Left Shoulder High.

Margaret with Flat Feet.

In turn they all wished to come to the Roosevelt School. I told them that they did not belong to the Roosevelt School. We have boys and girls there with "Good Posture"! But each one joined the train and as soon as he took hold of the hand of some one in the train he could not pull away. And here they are!

By this time the children with exaggerated postural conditions are all standing in a line by the side of the teacher:

Elizabeth with Poor Head Position.

John with Round Shoulders.

Mary with Round Back.

Allen with generally relaxed posture, Head Forward, Round Shoulders, Hollow Back.

Dorothy with Left Shoulder High.

Margaret with Flat Feet.

(All exaggerate the postural conditions so much that they look ridiculous. They make an amusing picture and the boys and girls get a concrete illustration of exaggerated poor positions.)

TEACHER (solemnly)—Elizabeth, why did you wish to come to this school so much?

ELIZABETH—I wished to come to the Roosevelt School because I know how to correct my head position. (At this statement Elizabeth pulls chin in and pushes her head up strongly, and stretches up tall. She assumes her natural posture, which is a very excellent one.)

TEACHER—Elizabeth, I am delighted that you have Good Posture! We have no boys and girls with poor posture at the Roosevelt School! (Turns to John, whose shoulders are drooping so low by this time that his head almost touches the floor.)

TEACHER—John, why did you insist upon coming to the Roosevelt School?

JOHN—I belong to the Roosevelt School. I know how to stand straight. (John stands tall, pulls the shoulder blades together and stands in a very good position.)

The teacher asks all in turn, and each boy and girl demonstrates that he or she knows how to stand correctly. Each knows how to hold the segments of the body in the correct position. When the story is completed the correction of all defects has been illustrated. The boys and girls with correct posture stand before the group.

TEACHER—I am delighted to know that I have a Golden Goose. I hope that every school has a Golden Goose so that none of the boys and girls with good posture can get away.

## V. Original Posture Play.

The following clever "Posture" play was written and produced by the 6B children of the Longfellow School, Pasadena, California, under the direction of Mrs. Mary Sharp Hetzel, who was working with a special posture group of fifth and sixth grade boys and girls. The play is published by courtesy of Mrs. Mary Sharp Hetzel.

Work of this sort is valuable in creating and stimulating an interest in good posture by bringing the posture idea into the play vocabulary of the child. It has stimulated interest in hygiene and physical education, not only in the special posture group but also in the other classes.

### PRINCESS PRETTY POSTURE

A Play in Three Acts
Produced by the Students of 6th-B Grade of the
Henry W. Longfellow School,

Pasadena, California

#### CHARACTERS

| | |
|---|---|
| KING | Wilfred Ivan |
| QUEEN | Fern |
| PRINCESS | Margery |
| ATTENDANT | Billy Reid |
| QUEEN OF THE POSTURE FAIRIES | Julia |
| FAIRY EXERCISE | Elizabeth |
| FAIRY DEEP BREATH | Helen |
| FAIRY REST AWHILE | Virginia |
| WICKED GOBLIN, DROOPOVER | James Wilkerson |
| WICKED GOBLIN, LACK OF PERSEVERANCE | Robert |
| WICKED GOBLIN, SMALL BREATH | David |
| WICKED GOBLIN, DON'T WANT TO | Wayne |
| WICKED GOBLIN, CARELESSNESS | Brantley |
| WICKED GOBLIN, FORGETFULNESS | Billy Hubley |

### ACT I

The Act opens with the King and Queen seated on the Throne, discussing their Daughter's poor posture.

QUEEN—I am getting worried about Gwendolyn's posture; every time I see her, she is drooping over.

KING—It displeases me very much to think that our Daughter carries herself so poorly.

QUEEN—I do wish we could do something to help her.

(*Enter Attendant.*)

ATTENDANT—Your Majesties, there are some visitors at the door.

KING—Bid them enter.

VISITORS—Your Majesties, we have come from a far-off land. We have heard of your Daughter's poor posture, and have come to improve it. We are from the Fairies' Good Posture Island, away out in the middle of the ocean.

KING—If only you could help my poor Daughter, I would give you anything in my kingdom!

QUEEN—Yes! Yes! Anything! But I pray you by what way will you do it?

FAIRY QUEEN—With your consent, we shall take your Daughter to Good Posture Island and she will stay with me there a year, and I assure you I shall bring her back with better posture than any other Maiden in your Kingdom.

QUEEN—I would be very lonesome without my Daughter for one year.

KING—But, my Dear, would it not be better to have her go and come back straight?

QUEEN—Yes, I will give my consent.

FAIRY QUEEN—I thank you very much for your consent, your Majesties. We will come and take your Daughter to-morrow morning just as the sun is coming up.

(*End of Act I.*)

### ACT II

PLACE—*Fairies' Good Posture Island.*
TIME—*Eight Months Later.*

FAIRY QUEEN—My, but your back is growing straighter! You may soon go home. I am going to leave you with Fairy Res' Awhile until I come back.

FAIRY REST AWHILE—Here, lie on this couch for a minute. I forgot my wand, or I would not leave you.

Princess—Oh, I wish all the fairies would forget their wand so I could be alone.

(*Goblins Enter.*)

Fairy Queen's Soldiers: Will Power, Thoroughness, Determination.

Goblin Droopover—Oh, look at that funny girl! She's lying on a flat couch. It will make her back straight. Hey, Lack-of-Perseverance! Lack-of-Perseverance—oh, why?

Small Breath—Oh, look at the deep breaths she takes! I'd be afraid I'd burst! Don't-Want-To, go ask her what her name is.

Don't-Want-To—Oh, it is too hard on my new shoes in that moist grass. I don't want to. You do it, Carelessness.

Carelessness—Oh, I am too careless. I might break my leg. You do it, Forgetfulness.

Forgetfulness—All right, I will try. (Forgetfulness *starts off and bumps into the gate.*) Oh, I forgot that was there. (*He goes up to* Gwendolyn.) What are you sitting there for? Oh, pardon me, I forgot you were lying down.

Gwen.—I am waiting for Rest Awhile.

Forgetfulness—How long will it be before she comes?

Gwen.—About five minutes.

Forgetfulness—Come on, fellows, we have to take her. Let's do it!

Others—No, we are escaped.

Forgetfulness—Everybody says no.

Small Breath—Lack of Perseverance didn't.

Forgetfulness—Come on, Lack of Perseverance, you and I will do it.

(Forgetfulness *and* Lack of Perseverance, *followed by the other evil* Goblins, *approach the Couch.*)

(*Scene with* Goblins *just as they are taking* Gwendolyn *off.*)

(*In comes* Fairy Rest Awhile.)

Fairy Rest Awhile—Queen! Queen!

(Fairy Queen *enters and sees* Goblins, *waves her wand, and calls out*): Oh! Guards, Will Power, Thoroughness and Determination!

(Guards *enter.*)

(Guards *swing their swords,* Goblins *slink off to side of stage, and* Guards *finally drive them off.*)

Gwendolyn—Oh! I was so frightened, Dear Queen! If it had not been for your brave Guards, the evil Goblins might have carried me off.

Fairy Queen—I feared these Goblins for a long time, but at last I have them in my power.

Gwendolyn—Your brave straight Guards surely frightened them away.

Fairy Queen—You are as straight as the Guards now, my dear, and to-morrow as the sun sets we shall enter your Father's Kingdom.

(*End of Act II.*)

### Act III

(*Throne Room of* King *and* Queen.)

Queen—I wonder when our Daughter will be back. I hope when she comes she will have a better posture.

King—The year is up to-day. She ought to be home some time to-day.

Queen—Oh, my! How glad I will be to see her!

Attendant—Your Majesties, there is a strange procession waiting to see you.

King—Show them in at once.

(King *and* Queen *look at each other, and the* King *says to the* Queen):

Queen—Oh! If it only were——

(*Procession of* Fairies, Attendants, Princess, Maids, *and* Soldiers.)

(King *and* Queen *leave throne, and rush to* Princess.)

Queen—My Daughter! My Daughter!

King—Oh, Gwendolyn, I can hardly recognize you! Your back is so straight. (*Turns to* Fairy Queen) And to you, Dear Fairy Queen, I will give anything in my kingdom.

Fairy Queen—I have already had my wish, and that is to see your Dear Daughter have a splendid posture.

(*Turns to* Princess.)

Fairy Queen—And now, Dear Gwendolyn, I must be going, but to you I will leave my three brave Guards, Determination, Will Power and Thoroughness. With these three Guards good posture will never leave you.

(*With these words the* Fairy Queen *departs.*)

## VI. Good Posture Play, by Beatrice Clark, Pasadena High School.

### The Idol Oracle

*The* Idol Oracle *is seated on a dais—in the corrective position with the sacred block on her head.*

*From the anteroom to the foot of the dais run the balance boards.*

*A girl comes before the* Idol Oracle, *upon the balance boards, bows and performs all corrective salutations due an idol oracle.* (*Two or three corrective exercises introduced here.*)

Idol Oracle—What is it that thou most desirest in all the world?

1st Girl—O Most Powerful! It is to fly through the air.

Idol Oracle—But how would'st thou fly through the air?

1st Girl—Like this, O Powerful. (*Assumes position.*)

Idol Oracle—Ah, yes! Go, and for three hundred and sixty-four days attempt to fly as thou hast just now shown me, and at the end of the year thou wilt be able to fly.

(*The girl takes the regulation ceremonious departure from the sacred presence. Another corrective exercise.* Second Girl *comes before the* Idol Oracle *and kotows as the* First Girl *did.*)

Idol Oracle—What is it that thou most desirest in all the world?

2nd Girl—O Idol! It is to be able to touch the floor with the tips of my fingers.

Idol Oracle—Is it possible that thou art unable to touch the floor with the tips of thy fingers? Why, it is most simple.

2nd Girl—Not when you try to do it this way. (*Tries, but cannot touch the floor.*)

Idol Oracle—Ah, yes! Well, reach thus for three hundred and sixty-four days, and at the end of a year thou wilt be able to touch the floor with thy finger tips.

(*Makes same ceremonious exit as* First Girl.)

(*Other girls enter, each with a special exercise, until all exercises have been demonstrated to the* Idol Oracle.)

*For final scene, the slaves of the* Idol Oracle *might perform a fiendish (corrective) dance.*

*Incense, low lights, etc. Lots of Oriental music.*

# CHAPTER XXXII

## Bibliography

A working bibliography in the field of Physical Education is presented. Special emphasis has been placed on books, magazines and articles on Health, Corrective Physical Education and allied subjects. The authors apologize for the omission of many excellent books and articles. For a comprehensive bibliography in physical education we refer to the following:

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3 p., ℓ., v-xiv, 521 p. front., illus. 24 cm.

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